

COMMUNITY PARTICIPATION AND PSYCHOLOGICAL DISTRESS

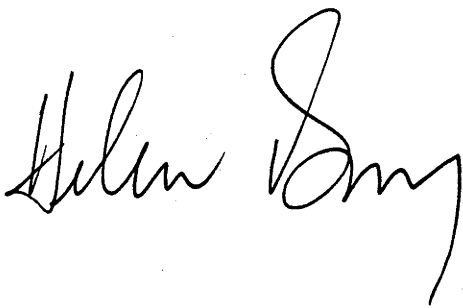
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STATEMENT OF CONTRIBUTION

The concept for and design of this study were exclusively my own, as was the design of instruments for use in the study, as described in Chapter 2. The selection and adaptation of existing instruments were my own work. I collected all the data for the study, and independently sought and obtained funding for the conduct of the research. Subject to the provisos described in the Acknowledgements that follow this statement, I selected the analytic techniques used in the study, and carried out and reported on all analyses of the data. I drafted, revised and edited all sections of this thesis.

A handwritten signature in black ink, appearing to read 'Helen Berry', written in a cursive style.

Helen Berry

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ABSTRACT

Background: Studies in early psychiatric epidemiology explored the nature of the social, political and historical environment and its relationship to psychiatric morbidity. Modern psychiatric epidemiology has not had this focus, but has instead examined psychiatric morbidity from the perspective of the individual. However, the relationship between one aspect of the social environment (community healthiness) and psychiatric morbidity has begun to be explored through the concept of social capital. Recent research appears to indicate that communities featuring high levels of social capital have lower rates of mental health problems. Yet research into social capital has failed to clarify what social capital is, how its different parts relate, or how best to measure it. Of particular relevance to its use in research in social psychiatry, there has been little empirical research into a key aspect of social capital, volitional community participation. The aims of this thesis are therefore (a) to attempt to describe volitional community participation by exploring its structures and dynamics and (b) to describe how the structures and dynamics of community participation are associated with psychological distress, including in regard to their relationship with social trust. The findings are reviewed in terms of the contrasting experiences of women and men and of three generations of adult Australians.

Method: This thesis is based on the *Eurobodalla Study*, which was purpose-designed to address the research aims. It is a stratified cross-sectional general population survey conducted in coastal New South Wales, Australia. Participants were 963 adults aged 18-97, randomly selected from the electoral roll. They filled out an anonymous, voluntary mail questionnaire. Data were collected from late 2001 to early 2002.

Results: Exploratory and confirmatory factor analyses revealed that community participation contains fourteen separate domains of activity and three higher order “super-domains”, including informal social connectedness, civic engagement and political participation. Multi-dimensional scaling revealed the fourteen domains could also be ordered on two dimensions, a public-private dimension and a choice-obligation dimension. Further, respondents were grouped via cluster analysis to reveal a typology of seven kinds of people based on patterns of participation, which included a group for each generation of men and women (six groups in total), and a group of “elite connectors”. There were striking differences in the profiles of the seven types in terms of patterns of participation, socio-demographic characteristics, and distress.

Conclusions: Community participation is not a unitary concept, but is made up of fourteen distinct domains organised within three super-domains. Further, the domains differ in whether they reflect public or private kinds of participation, and whether people undertake them primarily out of choice or out of obligation. Not all domains of community participation are associated with mental health and the strength and direction of the association differs amongst those that are. Lower levels of distress were found among older generations and among elite connectors, and worse among Baby Boomers and Generation Xers, particularly among Baby Boomer men and Generation X women. Future research into the relationship between community participation and mental health might benefit from taking account of its structures and dynamics and of the patterns of participation that characterise different types of people.

Odile and Edmund

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CHAPTER 1: INTRODUCTION

CHAPTER SUMMARY

This chapter begins with a statement of the broad area of interest of the thesis, and is followed by a targeted review of literature and rationale for the study. Various theoretical stances with respect to explaining the relationship between community participation and mental health are presented, and the thesis is located in terms of one of these stances, a social capital explanation. An analysis of the strengths, and of the conceptual and methodological challenges, of social capital research follows, together with specific research questions to be addressed. The chapter concludes with a statement of aims for the study, a summary of the hypotheses, and an overview of the contents of each chapter in terms of addressing the hypotheses.

MENTAL HEALTH, COMMUNITY PARTICIPATION, AND PSYCHIATRIC EPIDEMIOLOGY

The relationship between participating in the community and the onset and course of mental health problems¹ received research attention in the early days of psychiatric epidemiology, and has also been the subject of research very recently in the field of social capital. This chapter presents a targeted review of both fields of research, and describes how this thesis builds on ideas from different research disciplines, including psychiatric epidemiology, psychology, political science, and sociology. Theory development and methodology are built primarily on psychiatric

¹ The term “mental health problems” is used in this thesis to denote specific mental disorders that meet clinical diagnostic criteria, and also mental health problems at sub-clinical levels.

epidemiology, the field of research of this thesis. Early studies in social psychiatry (a branch of psychiatric epidemiology) explored longitudinally the relationship between individual psychiatric morbidity and the social, economic and historical context in which study participants were living. This interest in social psychiatry is not prominent in modern Australian psychiatric epidemiology. But the relationship between the quality of the socio-economic environment and individual psychiatric morbidity has begun to receive attention through the notion of social capital. This is where other fields of research make a contribution.

In terms of theory development, the literature on social capital is mostly found in the fields of political science and sociology, with some core elements explored empirically in medical and, to some degree, psychiatric epidemiology. I have therefore drawn material on social capital, as relevant to psychiatric epidemiology, from those fields. Specifically, community participation is the feature of interest in this thesis, with a subsidiary focus on social trust, so these are the elements that I have emphasised. The latest research findings about psychiatric morbidity are taken from modern psychiatric epidemiology. These findings are supplemented by material on life course development, drawn from developmental psychology, personality, also drawn from the field of psychology, and material on social support drawn from psychology and psychiatric epidemiology.

Finally, in terms of methodology and analysis, which are a major focus of this thesis, the methods used in psychiatric epidemiology are very different from and greatly superior to those used in social capital research. The thesis uses epidemiological approaches supported by technical material on instrument development common in psychology (for example, as in a measure of trust that I analyse on pp.37-38 of this chapter). These ideas and their sources are reviewed in this chapter, and detailed with respect to measure selection and development in Chapter 2. Chapters 3 to 6 present information on the techniques and analyses appropriate for responding to the research questions together with the analyses and findings, with overall findings and implications drawn together in the final chapter.

In sum, this thesis is about how a feature of the social environment (community participation) is related to psychological distress, including possible causal pathways. The thesis is thus centred in the field of psychiatric epidemiology. But by borrowing to a limited degree certain ideas and technical approaches from other disciplines, the elements, structures, and dynamics of community participation, and the relationship between community participation and mental health, are examined.

COMMON MENTAL HEALTH PROBLEMS IN AUSTRALIA

Mental health can be defined as people's ability to "... think and learn, and [to] live with their own emotions and the reactions of others" (Herrman 2001). Such attributes are becoming less commonplace, because the prevalence of common mental health problems, such as anxiety and depression, has been steadily increasing (Twenge 2000). This trend is likely to continue (Sartorius 2001). Research indicates that the prevalence of mental health problems is also increasing among children in Australia (Langsford et al 2001), as it is in America (Browne et al 2004). Currently around one in five Australian adults meets the diagnostic criteria for a mental disorder each year (Andrews et al 1999), and many more exhibit sub-clinical levels of symptomatology (Butterworth & Berry 2004)². Indeed, mental health problems have become the leading cause of non-fatal disease burden in Australia and account for nearly one-third of years lost to disability (Mathers et al 1999). They account for more than twice the level of disability or impairment in the Australian community than the next most disabling health problem, nervous system and sense organ disorders.

Costs of mental health problems

The prevalence and impact of mental health problems is thus vast, and they affect society and individuals in many ways. Firstly, the direct economic costs of mental health problems to the healthcare system are enormous (Garattini et al 2004, Ingoglia 2003, Knapp 2003), with depression and anxiety contributing the largest drain on healthcare resources (Tylee 2000). These costs are not only apparent in developed

² See Appendix 1.1.

economies, but also in developing economies (Harpham et al 2004, Patel & Kleinman 2003). Further, levels of disability associated with mental health problems are a major contributor to levels of unemployment and thus also involve massive costs to the economy (Butterworth & Berry 2004). In addition, mental health problems account for significant productivity losses among people in paid employment, particularly in terms of reduced effectiveness on the job, but also in terms of sick days (Lim et al 2000).

General costs to society

Though extensive in their own right, the costs of mental health problems are not limited to economic productivity and to the healthcare system, but are also felt in fields as diverse as education, housing, welfare, and the criminal justice system (Ingoglia 2003). For example, mental health problems are associated with more frequent and more severe criminal offending (Hodgins 2001, Hodgins & Lalonde 1999, Munkner et al 2003, Nelson 2002), especially for those with dual diagnoses (Putkonen et al 2004). Though the extent of the association is contested (Draine et al 2002), there is consensus that offenders with mental health problems experience more difficulty in their rehabilitation than those without mental health problems, and require special services (Kolker & Delgado 2003). This is also the case for juvenile offenders (Stewart & Trupin 2003).

Costs to individuals

Mental health problems also place an enormous burden, financially and emotionally, on those who care for people experiencing problems (Droes et al 2004), and on others close to them. For example, children growing up in families in which one of their parents experiences mental health problems are at significantly higher risk than other children of developing mental health problems or displaying disordered behaviour (Baydar et al 2003, Hinshaw 2004, Kilic et al 2003). In addition, for those individuals experiencing mental health problems, the subjective experience of their disability, and the accompanying levels of suffering, can be profoundly distressing (Rodgers et al 2004). Western European research has shown that diseases can be

given weightings that allow them to be compared in terms of their severity, and this helps illustrate the severity of the subjective experience of specific mental disorders. For example, in terms of the severity of the illness, out of fifteen illnesses, severe depression ranked third behind quadriplegia and being in the final year of a terminal illness (Schwarzinger et al 2003). In Australia in 2001, around 2% of deaths and 11% of years of life lost resulted from suicide, and seven Australians end their own lives each day (Commonwealth of Australia 2003).

THE NEED FOR RESEARCH INTO MENTAL HEALTH

Given the vast economic, social, and personal costs of mental health problems, it is imperative to find ways, where possible, to prevent their development, and to treat problems quickly and effectively following onset. According to the *National Action Plan for Promotion, Prevention and Early Intervention for Mental Health* (Commonwealth of Australia 2000) for Australia, a spectrum of mental health interventions needs to be applied according to the nature and stage of the disorder. These interventions should address the needs for prevention, treatment, and continuing care, as appropriate to the disorders and to the circumstances of the individuals concerned.

Yet despite the research-based, consensual, and practical recommendations outlined in the *National Action Plan*, mental health researchers, clinicians, carers, and people with mental health problems point to the inadequacy of mainstream mental health services (Hickie et al 2001). They also point to the extensive unmet need (Ialongo et al 2004), and it has been argued that there is a need for a greater awareness of the impact of mental health problems on the community and on individuals (Anonymous 2003, Herrman 2001, Tylee 2000). This is also the case in Australia (Andrews et al 2001a, Andrews et al 2001b, Herrman 2001), where unmet need is especially marked in deprived areas (Abas et al 2003), and where only about one in six people with mental health problems receive effective treatment (Andrews et al 2001b).

One of the strategies required in effectively addressing increasing levels of mental health problems, and in meeting the need for effective interventions, is to increase the current level of research funding. A recent Australian Society for Health Research report discussing methodologies to quantify the impact of health interventions demonstrated stunning returns on investment in health research and development (Access Economics Pty Ltd 2003). But in terms of the disease burden of mental disorders, mental health is substantially under-funded in Australia (Jorm et al 2002), and many potentially useful avenues of research remain unexplored. One of these is the subject of this thesis.

A PROPOSITION: PEOPLE ARE PRODUCTS OF THEIR ENVIRONMENT

This thesis examines the relationship between volitional community participation and general psychological distress. Volitional community participation refers to the many ways that people can participate in their communities out of choice. That is, it excludes kinds of participation that people are not free to choose to do or not to do, such as shopping, accessing medical services and, for many, engaging in paid employment. Examples of volitional community participation include spending time with friends, belonging to a sporting club, volunteering, and going on political demonstrations (Vromen, 2003).

First and foremost, it is necessary to acknowledge that community participation does not exist in a vacuum, but within a dynamic socio-economic context. This context affects health outcomes for communities and for individuals. In that it affects health outcomes generally, it affects mental health outcomes too, and there is extensive evidence linking mental health with the socio-economic context (eg., Rodgers 1991). The links between the socio-economic context and community and individual health outcomes are not usually direct, and do not affect all people equally. Instead, they are felt primarily through a range of mediating factors. Among these mediating factors is community participation. Two case studies from early longitudinal studies in psychiatric epidemiology are presented below. They both illustrate the

extensiveness of the range of socio-economic factors that can be relevant to mental health, and the complexity of the causal pathways linking factors within the social environment to mental health outcomes.

EARLY RESEARCH LINKING COMMUNITY PARTICIPATION AND MENTAL HEALTH

Early longitudinal studies in psychiatric epidemiology described the social environment in which people lived, and linked facets of this environment with individual and group mental health outcomes via various risk factors. Examples of this kind of study can be found in the work of Elder and his colleagues (Elder 1979, Elder 1994, Elder & Caspi 1988, Elder et al 1985) and Leighton and his colleagues (Leighton 1965, Leighton 1994, Leighton et al 1962). Both sets of studies were conducted in North America, Elder's in Berkeley, and Leighton's in Canada. Elder's participants were born in the 1920s, and constituted the first longitudinal cohort studies of children. Selected findings from these studies have been presented here as illustrations of how the social environment can influence mental health outcomes and, in particular, the role that community participation plays in this relationship.

The effects of the Great Depression on mental health

Elder charted the effects of the Great Depression of the 1930s on the individual psychosocial development of two cohorts of children. The older cohort, born in 1920-21, were adolescents during the Depression while the younger group, born in 1928-29, were young children. These studies generated numerous interesting findings, including findings about some of the moderators and mediators of the relationship between the environment and mental health outcomes. Elder's findings with respect to the psychosocial development of study participants who were adolescents during the Depression (the earlier born cohort) are presented here as an example.

Being a teenager in the Depression: good for boys, bad for girls

The experience of adolescent girls during the Great Depression was quite different from that of adolescent boys (Elder & Caspi 1988). Generally speaking, being an adolescent during the Depression was harmful to the psychosocial development of girls, but it was beneficial to that of boys. In both cases, the harm and benefits resulted from the effect that poverty had on differences in the level and nature of community participation experienced by girls and boys.

Not all families experienced extreme financial adversity, which Elder called “deprivation”³, during the Great Depression of the 1930s. But all households that did experience deprivation attempted to compensate for their loss by “restructuring resources and relationships” in different ways (Elder & Caspi 1988). These restructurings, some of which delivered more successful outcomes than others, mediated the impact of economic adversity on members of the household system, leaving some harmed and some strengthened by the same adversity, even within the same household. Overall, girls fared badly because their deprivation meant they missed out on participating in desired ways in their community. Specifically, they missed out on socialising with their peers and meeting boys. Instead of having the time and the money to go out and have fun, they were not able to buy fashionable clothes and spent almost all their time at home performing little valued household chores, the quantity of which was greatly increased by their deprivation. Thus deprivation had the effect of pushing adolescent girls prematurely into adult roles, and these roles alienated them from their community. The end result of this chain of factors was elevated rates of mental health problems among deprived adolescent girls.

Boys’ lives were also affected by household restructuring but, in their case, it led to increased community participation. Specifically, it led to early participation in the

³ In this research, deprivation is a relative rather than an absolute concept, and refers to the degree of financial adversity experienced. Its specific definition is living in a household that lost at least one-third of its pre-1930s wealth during the Great Depression Elder GH. 1979. Historical change in life patterns and personality. *Life Span Development and Behavior* 2: 117-59.

paid workforce. As soon as they were old enough, boys in deprived households would be expected to find paid work. As very young adolescents, they would perform simple tasks (such as running errands for neighbours), for which they would be paid small amounts. As they grew older they would progress to more responsible and more highly paid work. Unlike the girls' work, the boys' work took them out of the home, and it was greatly valued because it brought money into the house. As a result, working boys were granted premature access to the respect, freedoms, and privileges usually reserved for working men. So, Elder concluded, the boys "were needed, and, in being needed, they had the chance and responsibility to make a real contribution to the welfare of others", which strengthened their sense of belonging (1974: p.291). The end result of this chain of factors was lower than average rates of psychiatric morbidity among deprived adolescent boys.

As for their sisters, deprivation had the effect of pushing adolescent boys prematurely into adult roles. But in the boys' case, these roles connected them to their community, rather than alienating them from it. And so, while the girls' sense of self-worth tended to be undermined by their adult role-taking, that of the boys could be enhanced, and these contrasting life experiences were reflected in contrasting mental health outcomes at the time and throughout their lives.

Better to be born poor than to become poor

Mediators and moderators of the impact of the social environment on individual mental health outcomes may be further explored by examining the circumstances of the adolescents more closely. For example, outcomes for girls were not uniform, and their experiences varied markedly depending on their particular circumstances. Elder described two sets of circumstances (1988). Firstly, living in a family that sustained heavy financial losses during the Depression was a risk factor for the development of mental health problems among adolescent girls, but not equally among all girls. In terms of mental health outcomes, girls whose families were formerly financially comfortable responded to deprivation with elevated rates of mental health problems than did girls whose families were poor in the first place. Thus, deprivation was

associated with the development of mental health problems for all adolescent girls, but it was associated with higher rates of morbidity for formerly financially comfortable girls.

Fathers favoured good-looking daughters

Secondly, both boys and girls felt the stress of hardship partly through the more negative behaviour of fathers in deprived families (Elder et al 1985). For fathers, severe financial loss increased their “emotional instability, tenseness, and explosiveness” making them more “punitive and arbitrary”. Of particular note was the increased likelihood of fathers in deprived families behaving in a rejecting manner. While having a loving and supportive father was a protective factor against the development of symptoms of low self-esteem and serious psychological distress, having a rejecting father was a risk factor for these problems. In particular, the daughters of rejecting fathers were less goal-oriented, less socially capable, and felt more inadequate than the daughters of non-rejecting fathers. They were also less calm, more moody, and more easily hurt.

A girl’s appearance was a factor in her likelihood of being rejected by her father, and thus in her likelihood of developing mental health problems. Elder had the girls’ physical attractiveness rated by members of his team. He found that fathers were more likely to display rejecting behaviour towards their adolescent daughters if the daughters were not attractive. On the other hand, fathers of attractive daughters were more likely than average to behave in a supportive and nurturing manner, even if the family had suffered extreme financial adversity. These nurtured girls had lower rates of mental health problems than less supported girls, and both grew up to be more “competent selves” (Elder 1979), even though they grew up in deprived families. Thus, fathers’ rejection or support of their daughters was a mediator of the impact of deprivation on their daughters’ mental health, and the daughters’ attractiveness was a moderator of their fathers’ rejection or support.

These selected findings provide some insight into the complex and interactive nature of the causal pathways associating factors in the social environment with mental health outcomes in individuals (Elder & Caspi 1988, Elder et al 1985). The findings of research that examined mental health outcomes for a community, rather than for individuals, also illustrate this point.

Rebuilding after annihilation: The Stirling County Studies

A set of studies by Leighton and his colleagues charted the transformation over some twenty years of the impoverished and marginalised inhabitants of a small rural slum in Canada, "The Road", into an "integrated community" as prosperous, happy and productive as any other in the region. From a pervasive culture of despondency, alienation, and self-destructive negativity, the people of The Road acquired the skills and motivation to take charge of their lives and of the development of their community (Leighton 1965). Their descent into poverty and degradation appears to have originated from the erosion of their language and culture of origin, and from a comprehensive loss of economic opportunity. Prominent among the debilitating features of their degraded state were hostile mistrust of each other, and especially of strangers, a lack of ability or desire to cooperate to solve problems, and ways of behaving and dressing that marked them as undesirable to other people living in the surrounding region. Specifically, Leighton found "broken homes, few and weak associations, inadequate leadership, few recreational activities, hostility and inadequate communication, as well as poverty, secularization and cultural confusion" (Leighton, 1962: p.1021).

The process of recovery

The people of The Road did not initiate their own recovery (Leighton 1965). Local government officials, prompted by Leighton and his team, decided to intervene to help the community. Their intervention included tangible and cultural resources based on three strategies. The first was to encourage residents to develop leadership skills in the hope that this would lead to the introduction of "social organization" and social values. The remaining two were education and economic opportunities. The

process of change started with encouraging residents to cooperate to achieve one small goal, which was determined by the community itself. This goal was to raise enough money to introduce electricity into the schoolroom so that movies could be shown. The people were left to achieve this goal on their own and, to do so they had to learn basic leadership and cooperation. Their goal was achieved, and enough extra cash was raised to pay for electricity for two years.

This first achievement became the template for the next, and so on, until the community became practiced at solving problems and cooperating to reach shared goals. Over time, future-oriented and public-spirited values emerged within the community, along with rising levels of formal and informal social participation. The Road was eventually able to integrate itself completely into its region, and this helped it progress more quickly.

Complex causal pathways

In comparing The Road community with other communities in the same area, Leighton and his colleagues found that the process of developing and of recovering from mental health problems was not identical in all communities (Leighton et al 1962). For example, the risk of developing psychiatric problems was much greater for all people in disintegrated communities, regardless of social class. That is, people of lower socio-economic status in integrated communities faced a much lower risk of developing psychiatric problems than higher status people in disintegrated communities. More detailed analysis of participants' social networks revealed that belonging to a stable and well-integrated social group within the community reduced the risk of developing psychiatric problems compared with identifying with "non-conformists". Thus, while economic, educational, and work status factors all had a separate bearing on rates of psychiatric problems, all of them had to be taken together, along with other factors with which they were associated, to understand in a rounded way how a social environment could lead to the development of mental health problems.

Community participation is an essential feature of healthy communities

After following this community for nearly twenty years, Leighton concluded that the ability to work together to achieve collective goals was essential in overcoming the effects of poverty and degradation (Leighton 1994). To develop this ability, communities needed some initial assistance, including increased educational and economic opportunities. But more than that, they needed to acquire two essential skill groups. These were, firstly, the basic elements of “human relations”, to lead, to follow, and to cooperate. Second were the basic elements of self-management, confidence, optimism, and the ability to set and strive for practical goals. In a struggling community, these attributes could only be acquired in the context of learning through participating in the collective life of the community.

Leighton’s conclusions about what was required for a community to make a transition from falling apart to pulling together were strikingly similar to Elder’s essential criteria for a “competent self”. These criteria included being “goal-oriented” (planned, optimistic, and determined), not being “submissive” (helpless and resigned in the face of setbacks), and not exhibiting “self-inadequacy” (failure to value oneself and to expect others to do the same) (Elder 1979). Both Leighton’s and Elder’s study participants learned their individual skills in a social environment, the former through community participation, and the latter in the home.

In both sets of studies, therefore, community and individual outcomes were greatly influenced by specific features of the social environment, and this pertains to two propositions that are central to the development of this thesis. One is that the social environment, including levels of community participation, impacts considerably on outcomes for individuals as well as for whole communities. The second is that the pathways that lead from what goes on in the social environment to different individual mental health outcomes are both complex and indirect. That is, there are many factors that influence mental health, they interact with each other in many ways, and the associations among them are often non-linear.

ANOTHER PROPOSITION: PEOPLE CREATE THEIR OWN ENVIRONMENT

A complementary proposition is that the social environment is not a neutral external factor that affects all people in the same way, and to the same degree, but that people influence their own environment. For example, people with high levels of neuroticism attract negative life events. In a general population study of 892 Australians, people who reported symptoms of neuroticism were involved in more negative interpersonal interactions than low-neuroticism participants (Poulton & Andrews 1992). The authors concluded that high-neuroticism people could not be considered merely “passive reactors” to whom events happened, but were “highly emotionally sensitive and overly responsive” people who inadvertently attracted interpersonal difficulties.

In addition, not only can personality affect mental health at particular times, or with respect to particular events, it can influence mental health over the entire life-course. For example, evidence from a British longitudinal study, the National Survey of Health and Development, revealed that *adolescent* personality made a contribution to predicting *adult* mental health experiences (Rodgers 1996). Similarly, childhood adversity predicted chronicity in adult mental health problems in clinical and in general population samples of Australians (Brown et al 1994) and in international samples (Rutter & Smith 1995).

People can also affect other factors within their social environment, such as their levels of social support. For example, depending on their personality, different people have different types and levels of social support (Emmons 1992), including across cultures (Tong et al 2004). And in a twenty-year follow-up of London children who were ten years old in 1970, childhood behaviour problems predicted severely difficult life events in early adulthood, irrespective of factors such as adult behaviour, mental health, or continuing contact with family of origin (Champion et al 1995).

A FINAL PROPOSITION: PEOPLE ARE PRODUCTS AND CO-CREATORS OF THEIR ENVIRONMENT

With evidence to support the propositions that people are products of their social environment and that they also help create it, it would seem that the relationship between the social environment and individual outcomes would be reciprocal. That is, people influence, and are influenced by, their social environment. For example, early life experiences can lead to the development of certain attitudes and behaviour that can affect people throughout their lives. In one study, positive early relationships with parents were associated with higher levels of adult social support (Sarason & Sarason 1982). Further, people develop and change throughout their lifetime, and this takes place within a context of continual social change (Elder 1994).

The focus of this thesis is the relationship between mental health and a specific aspect of the social environment, community participation. It is therefore necessary to consider the nature of the relationship between mental health and community participation specifically, and to review any social, historical, or generational factors that are relevant to understanding this relationship. This will be the purpose of the rest of this chapter.

DIRECTION OF THE RELATIONSHIP BETWEEN COMMUNITY PARTICIPATION AND MENTAL HEALTH

There are three theoretical stances, or explanatory frameworks, with respect to the nature of the relationship between community participation and mental health. The first is that participation and mental health are not in fact linked, and that shared associations with other factors explain apparent links between them. That is, confounding factors lead to certain levels of participation, and equally lead to certain mental health outcomes. The second theoretical stance proposes that mental health problems lead to deficits in community participation, while the third proposes an opposite causal pathway. That is, a lack of participation leads to mental health problems. This third theoretical stance can also be interpreted as meaning that

participation is protective against mental health problems. These three stances are not mutually exclusive and are reviewed briefly in turn below.

Explanatory framework 1: Participation and mental health are not linked

The proposition that participation and mental health are not linked rests on evidence that confounding factors cause differences both in the features of individuals' social environment and separately in their mental health outcomes. I am not aware of any research directly addressing the relationship between confounding factors, mental health, and levels of participation specifically. However, it could be argued that the social environment includes community participation, and thus that findings about the social environment can be assumed to apply to participation. These confounding factors can be intrinsic or extrinsic.

Possible intrinsic confounding factors in the relationship between community participation and mental health

Personality is an example of an intrinsic confounding factor, and we have already seen that personality factors can affect individuals' social environment. For example, neuroticism attracts adverse interpersonal interactions (Poulton & Andrews 1992). Personality has also been linked directly to mental health problems (Heikkila et al 2004), such as psychological distress (Lincoln et al 2003), and burnout among students (Jacobs & Dodd 2003). Personality may also separately influence aspects of people's social environment and their mental health outcomes. One study found that personality independently predicted both mental health problems and social support (Sarason & Sarason 1982). People who tended towards inflexible, conventional, and hostile personality profiles reported lower levels of social support, and were less happy and more worried, than their more flexible, tolerant peers.

Another form of evidence that personality influences mental health outcomes is that interventions can be tailored to suit people's personality types. For example, an assessment of personality was used to select appropriate mental health treatment

programs for people whose problems require residential interventions (Fassino et al 2004).

Possible extrinsic confounding factors in the relationship between community participation and mental health

It has been proposed that “most mental health problems have neither psychological causes nor psychological solutions, but are socially caused and can only be socially solved” (Fryer 1999). Examples of “socially caused” or extrinsic factors that can separately influence both participation and mental health are poverty and unemployment. A relationship between poverty and mental health is clearly evident in developing economies (Harpham et al 2004, Mubarak et al 2003). A review of eleven community studies of the relationship between poverty and mental health in a number of developing economies indicated that poverty has been a risk factor for the development of mental health problems consistently over the last decade (Patel & Kleinman 2003). Following on from pioneering British work on the social aetiology of mental health problems (Brown & Harris), a relationship between poverty and mental health continues to be found in developed economies (Almog et al 2004, Mauksch et al 2003, Taylor et al 2003). Further, poverty has been linked to specific mental health problems. For example, it is among the factors that have been found to trigger the onset of schizophrenia (Mueser & McGurk 2004).

A review of the relationship between income support receipt and mental health summarised evidence showing that unemployment can lead to the development of mental health problems among a variety of groups within the general population, such as older men who had lost their jobs, and young people undergoing the transition from school to work (Butterworth & Berry 2004). Indeed, around the world, unemployment contributes significantly to the onset of and difficulty recovering from mental health problems (Akhavan et al 2004, Brown et al 2003, Dooley 2003, Fryer & Fagan 2003, Matoba et al 2003). Mostly, unemployment contributes to the development of common mental health problems, such as depression (Barkow et al 2003). But the links between unemployment and mental health problems can be very specific. For example, in Japan, unemployment has

been directly causally linked to completed suicides by hanging (Abe et al 2004). Lone parenthood has similar and often more severe effects on mental health (Butterworth 2003, Hope et al 1999).

Explanatory framework 2: Mental health problems are a barrier to community participation

People with mental health problems find themselves excluded from participating in their communities in a wide variety of ways (Bonner et al 2002), and isolation and alienation are common features of the lives of people experiencing mental health problems (Mubarak et al 2003). Indeed, studies from around the world show that people living with mental health problems not only feel isolated, but they share a history of being actively rejected by the general community (Madianos et al 1987, Phelan et al 2000, Rahav et al 1984, Smith 1981). Even groups that have come together in the community with the goal of supporting people with mental health problems occasionally reject some members. For example, mental health support groups have been shown to form and maintain strong behavioural norms, and violations of those norms have at times been punishable by exclusion from the group (Parr 2000). A recent Swedish study revealed that the degree of social isolation that people with mental health problems face is even reflected in higher rates of dying alone (Thiblin et al 2004).

As we saw in Explanatory framework 1, there is an extensively documented causal pathway from unemployment to psychiatric morbidity. That is, unemployment, which is a form of exclusion from participation in the community, can contribute to the development of mental health problems. The reverse is also the case, and mental health problems can contribute to the failure to find employment, or to the loss of employment (Danziger et al 2000a, Danziger et al 2000b, Derr et al 2001, Derr et al 2000, Lennon et al 2001). In addition, people who have lost paid employment commonly report feeling rejected by and alienated from the general community (Strohschein 1998), and this is linked to mental health problems (Forbes et al 2003, Mills et al 2004).

Another form of evidence of the causal impact of mental health problems on economic participation is that programs for addressing mental health problems can be remarkably effective in helping people find or retain employment (Butterworth & Berry 2004). Effective programs have included cognitive therapies, and training to enhance personal effectiveness skills, such as mastery and resilience. Of particular relevance to this thesis, one of the most effective forms of mental health intervention with respect to employment was assisting people in building their social networks (Harris et al 1999).

Explanatory framework 3: Lack of participation influences the development of mental health problems

This is the explanatory framework most strongly supported by the studies in psychiatric epidemiology reviewed earlier in this chapter. For example, Leighton showed that the first achievement of the people of The Road, raising money to get electricity connected in the church hall, was based on their coming together to address a collective need (Leighton 1965). That is, people who had previously had little to do with one another met to work out how they would collectively attain a goal. Prior to their coming together, rates of psychiatric morbidity were substantially higher than they were after they had started meeting. This participation in the community was the initiating force in the process of recovery within the community.

Echoing these community-level findings at the individual level, Elder and his team looked at the differential effects of participation and non-participation on adolescents growing up in the Great Depression (Elder & Caspi 1988). This research showed how withdrawal from the community led to the development of mental health problems among adolescent girls, while heightened involvement in the community was protective against the development of mental health problems among adolescent boys. It can thus be inferred that lack of participation played a causal role in the development and prevention of mental health problems among adolescent girls and boys respectively. The findings of early psychiatric epidemiology therefore indicated that participation was associated with positive psychological outcomes, and protective against the development of negative outcomes.

Recent studies have reported similar findings. Higher levels of individual connectedness are associated with fewer mental health problems (Kawachi & Berkman 2001, Lee et al 2001, Twenge 2000, Wainer & Chesters 2000), including among adolescents (Bond et al 2001). For example, in a study of over 1,200 Scottish adolescents aged 12 to 18 years, participating in social activities with peers was a protective factor against the development of mental health problems, and difficulties in social relationships were a source of distress (Hendry & Reid 2000). Another study involved over 12,000 American high school students who participated as part of the National Longitudinal Study of Adolescent Health (Resnick et al 1997). The study found that two aspects of connectedness (to family and to school) were more strongly associated than any other factors with lower levels of problems. These problems included distress, suicide ideation and attempts, violence, substance misuse, and problem sexual behaviour.

Participation in the community, or connectedness to others, is particularly important for people whose experiences in society are less easy, as a group, than they are for other groups, such as for New Zealand Maori (Huriwai et al 2000). Another study looking at the experience of particular groups within the community compared the social connectedness and mental health of immigrants with those born in the community (Hao & Johnson 2000). Participating generally in the community, religious observance, and being in a relationship were beneficial to everyone's mental health, but particularly to the immigrant residents.

Participation has also been shown to have a role in the course of mental health problems. That is, it has been argued that lack of participation inhibits recovery from mental health problems once they have started. For example, lack of participation has been associated with difficulty recovering from depression following the onset of an episode (Prince et al 1998). Thus, even where lack of community participation is not a primary cause of the onset of mental health problems, it still has an intermediate, or mediating, causal effect on their course.

SUMMING UP: PARTICIPATION AND MENTAL HEALTH ARE LINKED TO EACH OTHER, AND TO OTHER FACTORS

We have seen that participation and mental health are linked to each other, and to other factors. Some have argued that intrinsic factors (such as personality) and extrinsic factors (such as poverty and unemployment) directly cause differences in levels of participation and also in levels of mental health problems. Others have argued that mental health problems lead to a lack of community participation. Still others have shown that failing to participate in the community can lead to, or stand in the way of recovery from, mental health problems, and that community participation is protective against the development of mental health problems.

All three theoretical stances are valid and evidence-based, and they are not mutually exclusive. Indeed, studies in early psychiatric epidemiology have shown that the relationship between the social environment and mental health is complex and interactive, and that community participation is a mediator of this relationship.

However, while early psychiatric epidemiology focused on the relationship between the social environment, community participation, and mental health, recent psychiatric epidemiology has not had this focus. As a result, the least researched theoretical stance with respect to participation and mental health is the proposition that deficits in levels of participation may contribute to mental health problems.

USING SOCIAL CAPITAL THEORY TO EXAMINE THE RELATIONSHIP BETWEEN PARTICIPATION AND MENTAL HEALTH

Though contemporary psychiatric epidemiology has not emphasised the effect of community participation on mental health, research into social capital has begun to do so. This is a key field of research to investigate, because community participation is one of the most important components of social capital (Heying 1997). Thus this thesis draws on social capital theory to investigate the relationship between community participation and mental health. Methodological issues in doing this are

addressed later, while below is a brief review of the concepts behind social capital theory.

A SELECTIVE INTRODUCTION TO SOCIAL CAPITAL

Three authors have been prominent in theory development in social capital, Bourdieu, Coleman, and Putnam. Each has a different conceptualisation of the components, functioning, and role of social capital. In this thesis, I have emphasised the work of Robert Putnam. This is because (a) his conceptualisation dominates current debate (Farr 2004), (b) it is already extensively and almost exclusively used in epidemiology, and (c) this thesis is not about social capital, but about how the concept has begun to be used and could be further used in psychiatric epidemiology.

While Putnam's work is self-evidently scholarly and intrinsically interesting, it contains certain weaknesses that have not yet been addressed with respect to its use in psychiatric epidemiology. There is not yet agreement about exactly what social capital is, and which concepts are included in and which excluded from its definition. Causal relationships between social capital and current individual social and health circumstances have not been identified and, very importantly, concepts have not been properly operationalised and measured. This last issue is partly the result of the "opportunistic" (Edwards & Foley 1998) use of existing databases. Addressing this last issue comprises the main content of this thesis. Criticisms of Putnam's and other scholars' work are detailed in the following pages of this chapter and summarised on pp.52-53. With respect to these criticisms, the aims of the thesis are set out on pp.53-54 of this chapter.

The term social capital has appeared in its modern sense since at least early in the last century (Farr 2004). Describing the importance of large amounts of "social intercourse" as one way of supporting the successful education of children in West Virginia, America, Hanifan (1916: in Putnam, 2000, p.19) wrote that "the community will benefit from the cooperation of all its parts and the individual will find in [his] associations help [and] sympathy". Nearly eighty years

later, in his book *Making Democracy Work*, Putnam wrote of social capital as “features of social organization, such as networks, norms, and trust, that facilitate coordination and cooperation for mutual benefit” (1993: p.1).

Social capital as a public good⁴

Recent research interest in social capital has been extensive and it is now reasonable to conclude that, generally speaking, communities rich in social capital appear to enjoy both day-to-day and long-term physical health and social benefits. Social capital is considered to be of such importance to community wellbeing that the term is sometimes used as a synonym for community health. Healthy communities have been defined as those that have high levels of social capital, defined as community participation and trust (Kawachi et al 1998). Further, Gilbert (1993) describes healthy communities as those featuring dense networks, cooperation and trust, and as typically being organic, reinventing, and self-regulating. Unhealthy communities, on the other hand, have poor infrastructure and capacity building, high levels of crime, especially violent crime, and poor physical health (Hancock & Duhl 1988).

Contemporary commentary on social capital is thus generally based on the premise that social capital is, for the most part, a public good. This premise is so pervasive that it is frequently embedded in definitions of social capital, such as Putnam’s definition of social capital cited above. The argument is that, like growth in economic capital, growth in social capital is desirable because everyone benefits from it. Foley & Edwards (1998) point out that this argument is a foolish as saying that an increase in Gross Domestic Product translates to an identical increase in every household’s income. They also point out that, despite this serious failing of logic, many researchers continue to work on the assumption that, since social capital is a public good, it is in a nation’s interests to be flooded with it so that the rising general level will eventually “lift all boats”.

⁴ A public good is a benefit, such as streetlighting, that is available equally to everyone in the community, and whose use by one person does not diminish its availability to the next (Hawe & Shiell, 2000).

This view of social capital as a public good derives from the proposition that social capital is a property of the community as a whole (McKenzie et al 2002), and is a shared resource that community members can draw upon freely to solve individual or collective action problems that they otherwise could not solve (Lochner et al 1999). This is resonant of Leighton's conclusions with respect to the recovery of The Road in the Stirling County studies (Leighton 1965). In The Road, residents learnt over time to come together to achieve shared goals and, in time and with practice, they constructed a template for effective collective action. Thus, generally speaking, communities that are rich in social capital are vital and "organic", constantly renewing their ability to respond to group goals and to the needs of individuals (Gilbert, 1993).

Core components of social capital

As a first step in developing hypotheses about the validity of such a view, it is necessary to describe the constituent elements of social capital. At a very broad level, social capital is made up of two separate but overlapping ecological level core components. These are (i) participation, and (ii) social cohesion (Putnam, 2000: p.21). That is, one component has to do with *participating in the community*, the networks of association that participating generates, and the quality of relationships within and between those networks. That is, one part of social capital is the extent to which networks are established and maintained in the community, and the kinds of relationships they involve. Through investigating the elements, structures, and dynamics of community participation, this thesis seeks to clarify an aspect of this core component of social capital.

The other core concept within social capital is the *social cohesion* that results from participating in the community. In terms of social capital, social cohesion refers to how effective community networks are in bringing people together, and what kind of behaviour they engender. Thus social cohesion embraces those features of a community that have to do with the extent to which people are able and willing to

cooperate with one another (Saunders & Winter 1999), and the goals towards which they direct their cooperation.

Group cohesion is evident in community-level phenomena. These phenomena include social trust (trust in strangers), generalised reciprocity (“the kindness of strangers”), cooperation, organisation, information-sharing, and other pro-social norms (Portes 1998). They also include loyalty, conceptualised as the “glue” that binds members of cohesive groups to one another (Van Vugt et al 2004). Echoing Leighton’s conclusions about generating social change in *The Road*, Putnam proposes that participation is the component of social capital that leads to the creation of cohesion, including trust and reciprocity (Putnam, 1993, p.1). Through investigating the links between the elements, structures, and dynamics of community participation, and social trust, this thesis aims to help clarify the core concept of social cohesion and its place in social capital theory.

To sum up, in essence social capital is about the functioning and functionality of relationships between people at the ecological level, not at the interpersonal level. As with interpersonal relationships, group-level relationships “confer obligations and benefits” (Hawe & Shiell 2000). That is, social capital is about people’s group-based relationships with one another, and the patterns of rights and responsibilities that derive from them, viewed from the perspective of the community as a whole. Thus while individuals and their interpersonal relationships contribute to the creation and maintenance of social capital, and are affected by it, they are not its primary focus.

SOCIAL CAPITAL AND MENTAL HEALTH

With its emphasis on relationships within the community, it is logical that social capital would be linked to mental health. This is because people experiencing mental health problems often experience difficulties in relationships (Johnson et al 2000, Kato 2003, Sarason & Sarason 1982, Segrin 2000), including, in particular, in family relationships (Rodgers et al 2004). This could be expected to affect the extent to which they participate in their communities (as it does their economic participation),

and to affect their ability to contribute positively to, and take advantage of, the social cohesion that is associated with participating. Also, mental health is closely associated with physical health and, empirically, high levels of social capital have consistently been associated with better physical health and lower mortality (Kawachi et al 1997, Skrabski et al 2003)⁵. Though mental health may be seen at best as marginal as a health issue (Hickie 2002), and less important than physical health (Thornton & Tuck 2000), it must nevertheless be understood that mental health and physical health are deeply connected (Herrman 2001). Thus, where physical health problems are prevalent, so too will be mental health problems, and vice versa.

While ideas about the links between social capital and physical health have been extensively reported, research into the links between social capital and mental health is less mature. Nevertheless, a few studies have emerged linking social capital and mental health (Berry & Rickwood 2000, Caughy et al 2003, Kawachi & Berkman 2001, McKenzie 2003, Saluja et al 2003, Sartorius 2003)⁶. Evidence for links between social capital and mental health has also been found in developing countries (Harpham et al 2004). Based on these reports, some tentative conclusions are possible. For example, it appears that the size of the effects of social capital on mental health vary across disorders (McKenzie et al 2002). Further, social cohesion has been directly linked with specific disorders. For example, in a series of studies conducted in very deprived areas in London, high levels of social cohesion were linked to lower levels of schizophrenia (Boydell et al 2002, Boydell et al 2001, Boydell et al 2003, Morgan et al 2003, Murray et al 2003).

It is important to be cautious with respect to inferring causality in such studies, because there is sound evidence from longitudinal research that people with mental health problems migrate over time to socio-economically disadvantaged areas (Faris & Dunham 1939). This is because their socio-economic circumstances degrade the

⁵ For a review of the literature on the relationship between social capital and health, see OECD. 2001. *The Wellbeing of Nations: The Role of Human and Social Capital*, Organisation for Economic Cooperation and Development, Paris.

⁶ See Appendix 1.2.

longer their illness continues, and they have to move to more disadvantaged localities. Nevertheless, the relationship between social cohesion and mental health persists despite this (Silver et al 2002), and social capital appears to be a “promising heuristic” with respect to addressing mental health at the community level (McKenzie et al 2002).

At a more specific level, the links between mental health and some aspects of social capital are of particular interest. This is because these aspects are not just related to community wellbeing at the ecological level, as we saw in Leighton’s studies of The Road. They are also directly related to individual outcomes. For example, a key element of social capital is social trust (trust in strangers, or in others generally in the community). In a multivariate analysis, the relationships between trust in family, trust in friends, and social trust were compared with respect to their associations with general psychological distress (Berry & Rickwood 2000). The authors found the associations between distress and trust in family and friends to be small and non-significant respectively. However, the association between social trust and distress was substantial. Another study exploring social trust and mental health at the individual level has linked falling general levels of social trust over three generations of Australians with rising mean levels of psychological distress (Berry & Rodgers, 2003)⁷.

LEVELS OF SOCIAL CAPITAL ARE DECLINING

With so many benefits flowing from social capital to communities and individuals alike, including mental health benefits, it would seem desirable to ensure that stocks of social capital are built up, and maintained at high levels. Of concern, therefore, to researchers and policy developers alike is evidence of a substantial overall decline in levels of social capital over the last century. This decline has been linked to numerous factors, such as citizens’ growing disaffection with public institutions (Putnam 1995), and it has been associated with various undesirable outcomes. For example, in the United States, widespread and steadily increasing levels of violent

⁷ See Appendix 1.3.

crime have been linked empirically to falling social cohesion (Kawachi et al 1999) and a general erosion of social capital (Kawachi & Kennedy 1999).

While comprehensive studies have not been conducted to map long-term trends in levels of social capital in Australia, recent research by historians suggests that, consistent with worldwide trends, social capital is declining (Keen 1999), including within indigenous Australian communities (Edney 2002). In support of this view, Cox (2002) has shown that most kinds of associational activity have declined in Australia since the 1960s, and may have been replaced to some extent by increased television viewing. Based on the premise that social capital is a public good, and given its declining levels, it has been proposed that monitoring trends in levels of social capital in Australia is an important task (Siahpush & Singh 1999).

A normative concept

Against such a background, it is tempting for researchers and policy-makers alike to add their voices to the chorus advocating international government action to raise worldwide levels of social capital (Fukuyama 1999). But a note of caution is warranted. For one of the key observations that must be made about the literature on social capital, including in Australia, is that it is a normative concept. That is, particularly in the political science literature (Foley & Edwards 1999), social capital is held to be a public good, and this is interpreted to mean that we should all have more of it (Edwards & Foley 2001). But while normative approaches have their place (Pettit & Braithwaite 2000), an exclusively normative approach to research into social capital is a great weakness with respect to scientific rigour and valid public policy development. That is, no sound judgments can be made about the benefits or otherwise of social capital unless the information upon which they are based rests, at least in part, on sound scientific methods of investigation. Further, in order to develop wise public policy in terms of social capital, it is necessary not just to know *whether* social capital is a public good, but also *how* it operates. This pertains to issues of theory and method, and these are reviewed next.

THEORETICAL AND METHODOLOGICAL CHALLENGES IN SOCIAL CAPITAL RESEARCH

Despite what appears to be a glowing report card, research into social capital is fraught with theoretical and methodological difficulties (Hawe & Shiell, 2000). Thoughtful commentary points to the imperative to clarify the components of social capital (Baum & Ziersch 2003), to be cautious, particularly with respect to public policy formulation, of the currently “atheoretical” nature of social capital (Baum, 2000; Hawe & Shiell, 2000), to unpack factors that mediate or moderate social capital (McKenzie et al., 2002), and to determine the causal pathways between social capital and various outcomes in communities (Putnam, 2000, p.137). These and a range of associated issues are addressed in the following sections.

Conceptual fuzziness

The point has been made that the proposition that social capital is a public good is so ingrained in contemporary thinking about social capital that it is often included in its very definition. Thus it is proposed that high levels of social capital are typically found in healthy communities, and healthy communities are defined as those that possess high levels of social capital. Such propositions are clearly open to criticisms of circularity, and indeed, Putnam’s work on social capital has been described as confusing cause and effect (Heying 1997). In particular, Putnam’s definition of social capital has been described as being beset by “acute definitional fuzziness” (Edwards & Foley 1998). In response to continuing confusion about what social capital is (Hawe & Shiell, 2000), a vigorous debate on the topic is being conducted (Lynch et al 2000, Whitehead & Diderichsen 2001).

Untangling cause and effect

Nevertheless, in terms of social capital as a concept, there is some consensus about its core components (participation and cohesion), and many of its sub-components have been identified (such as social trust). However, the nature of the connections between them remains largely unexplained (Gaudiani 1996: in Rich, 1999).

According to Putnam himself, one of the key issues to address in research into social

capital is to “untangle the spaghetti”, and explore how the components of social capital are causally related (Putnam 2000: p.137).

Causal relationships within the concept of social capital

There are very few studies that directly attempt to address this issue. Leighton’s studies of The Road can be interpreted as indicating that participating in the community was a precursor to the development of social cohesion, while Elder’s studies showed that increased participation among adolescent boys led to increased sense of belonging. A link between higher levels of participation and higher levels of sense of belonging has also been made in a recent Australian cross-sectional study (Berry & Rickwood 2000). Some cross-sectional studies have used structural equation modelling to suggest the plausibility of the hypothesis that levels of participation may influence levels of social trust (Berry & Rickwood 2000, Brehm & Rahn 1997). But clearly, further investigation based on a range of research strategies is required in this area.

Causal relationships between social capital and mental health

While causal relationships *within* the concept of social capital have received little attention, causal relationships between social capital and various health and wellbeing outcomes have been extensively commented upon, and we have seen that studies have begun to emerge linking social capital and mental health. This commentary suggests that high levels of social capital contribute to favourable health and social outcomes.

Early longitudinal studies in psychiatric epidemiology, such as those reviewed previously in this chapter, support the proposition that participation and cohesion are among factors that lead to favourable mental health outcomes.

Confounding factors

In addition to the need to untangle cause and effect *within* the concept of social capital, and *between* social capital and various outcomes, it is necessary to untangle

factors that may influence social capital itself. In selectively summarising the studies of growing up in the Great Depression and of The Road, it has been proposed that the social environment affects mental health outcomes for individuals and communities alike. That is, human behaviour and its development are embedded in a social and historical context (Elder 1994). More recent studies have been cited that have shown that a range of macro-social factors, such as politics, economics, history, and the status of women combine to influence health and wellbeing (Lynch et al 2001). In particular, the economic backdrop to people's lives, especially absolute levels of individual income and relative deprivation (Marmot 2001), play a significant role in influencing outcomes. This is so even after taking account of a range of important community and individual level factors⁸. In addition, cross-cultural research, including research in a range of countries, has shown that macro socio-economic policies shape health outcomes for citizens, and that different approaches lead to different outcomes (Barbieri 1998, Van-Rees 1991).

Another body of research points to the importance of culture in influencing outcomes for individuals. It has been argued, for example, that certain attributes of culture in modern developed economies, such as individualism and materialism, are detrimental to health and wellbeing (Eckersley 2001, Eckersley 2004).

Therefore, in attempting to add to knowledge about how social capital might be related to mental health, it is necessary consider how macro-social factors such as these might be associated with social capital, and with the relationship between social capital and mental health. The effects of wars on communities and individuals are presented briefly below as an illustration of how factors in the macro-social environment can influence the course of people's lives.

Some indirect effects of war on communities

Factors other than the socio-economic features of people's lives play an important role in shaping community and individual experiences. For example, major events in

⁸ For a debate on this topic, see Baum (2000), Lynch (2000) and Wilkinson (2000).

history, such as wars, affect collective and individual development alike. With respect to collective development, for example, during the American Civil War, groups of women came together to make supplies such as bandages and clothing for soldiers. These groups eventually evolved into the American Red Cross (Putnam 2000, pp.267-268). Later, political involvement increased during the Vietnam War (Putnam 2000: p.18). Indeed, it has been proposed that war was the catalyst for the greatest boom in civic joining in America (Crowley & Skocpol 2001), with the Second World War leading to a particularly noteworthy boom in civic participation (Putnam 2000, pp.268-271).

Indeed, the generation of people who were brought up before the end of the Second World War remained unusually civic-minded throughout their lives (Putnam 2000: p.17) compared with those raised after the war (Putnam 2000: p.255). Thus not only the “civic drought of the Great Depression” (Putnam 2000: p.16), but also the Second World War, appear to have shaped the values and behaviour of a whole generation of Americans, and led to quite different patterns of community participation than are found among younger generations. We will return later to the issue of generational differences in patterns of participation.

Some indirect effects of war on individuals

The effects of the Second World War featured in Elder’s studies too, in particular because of the effects of conscription. These studies showed how such factors could affect individual outcomes, and how these outcomes could differ among people of different circumstances. Elder followed his two cohorts of Great Depression children into adulthood. Several experiences in early adulthood were central to determining positive outcomes in later adulthood for deprived boys. These included having a tertiary education, marrying and having children late, having a happy family life, enjoying work and, *especially*, doing military service (Elder 1979). The relative attractiveness of the military to deprived boys was evident in their retention rates. While all young men were required to perform military service, they were not required to continue on to military careers. There was a large difference in the

proportion of young men from deprived backgrounds (60%), compared to the proportion of their non-deprived peers (17%), who chose military careers.

Military service appears to have offered young men from deprived backgrounds an escape from a painful and chaotic past into a structured and predictable world. In the military, deprived young men encountered substitute opportunities to develop the competent self that they failed to develop as children. Joining the military was also associated with other beneficial factors. For example, it tended to delay marriage and children. It also offered specific opportunities, such as facilitating obtaining a tertiary education, because the military provided educational opportunities otherwise unavailable to deprived boys.

Causal relationships between social capital and mental health are reciprocal, interactive, and indirect

Other confounding issues also need to be considered in investigating the relationship between social capital and mental health. For example, earlier in this chapter it has been proposed that differences in individual mental health influence people's social environment. It may also be, therefore, that individual mental health is not only an outcome of social capital, but is a causal influence on it. Further, in that factors in the social environment and mental health influence each other, their relationship is reciprocal. Thus any relationship between social capital and mental health might also be reciprocal. Finally, as well as being in reciprocal relationship, factors in the social environment and mental health outcomes are linked via interactive and indirect causal pathways. For example, while one study found poverty to be a direct risk factor for the development of mental health symptoms, mental health problems developed *primarily* as a result of other factors, such as lack of education, vulnerability to violence, ill health, insecurity, and despair, all of which were the direct result of poverty (Patel & Kleinman 2003). The same complexity and indirectness of effect could be expected in any relationship between social capital and mental health.

Social capital mediates the relationship between the broad macro-social factors and mental health

Thinking back to the studies in early psychiatric epidemiology, community participation was an important component of the causal pathways connecting the social environment and mental health. That is, one of the reasons that the social environment affected mental health outcomes was because it affected the extent and nature of community participation. Thus, community participation was a mediator of the relationship between the social environment and mental health. Indeed, it has been asserted that it would be simplistic to treat social capital as if it had a life apart from its political and social context (Edwards & Foley, 1998).

It has been proposed that community participation is one of the core components of social capital (Heying 1997). Thus, if community participation is a mediator of the relationship between the social environment and mental health, then social capital is likely also be a mediator of any such relationship, and this has been proposed (Tucker 2002). Indeed, some researchers have suggested that socio-economic factors (such as income inequality) can cause increases in negative outcomes in communities *because* they can cause a drop in levels of community participation and the cohesion it generates (Kawachi et al 1997)⁹.

Methodological issues

The need to disentangle the components and operation of social capital, and to take into account the direct and indirect effects of factors in the social environment, raises the question of methodology. Without a sound methodology, it is impossible to make reliable, valid conclusions about the subject of the research. There are a great many factors involved in selecting and implementing an appropriate research methodology, too many to be reviewed here. Instead, two criticisms of the conduct of research into social capital are presented, together with a rationale for the methodology applied in this study.

⁹ For a review of this argument, see Hawe & Shiell (2000).

Data mining

A common method of conducting research into social capital is that of data mining. This involves locating existing databases that appear to contain interesting material, and examining them post hoc and atheoretically in order to draw conclusions about social capital. This is a major method of inquiry applied by Putnam and his followers. Typically, the databases these researchers mine contain data collected from surveys, such as the American General Social Survey. Using surveys to collect data for research into social capital is a generally accepted method. But the “opportunistic” use of existing databases is unacceptable because these studies were not designed to operationalise properly the complexity of social capital (Edwards & Foley 1998). However, it would be foolish to deny that opportunistic data mining has a place in research, particularly with respect to identifying interesting social issues and deriving general research questions. Putnam’s research is a stunning example of the value of careful and responsible data mining. But theory development demands much more than this. It requires valid, reliable data that can be interpreted in response to testable hypotheses, and that can suggest answers to specific research questions. To achieve this, purpose-designed studies that properly test a coherent theory are required.

Concept operationalisation and measurement

An important part of conducting sound research is having valid and reliable measures of constructs. From a scientific point of view, there is little to be gained by adopting an appropriate research strategy if the concepts and components of interest cannot be accurately operationalised and validly measured. Concept operationalisation and measurement have been particularly poor in social capital research, partly because of the fuzziness of the concept. An example of poor concept definition, and thus of poor operationalisation and measurement, is presented in the next section to illustrate the importance of this issue.

Operationalising and measuring social trust

One of the key components of social capital is social trust. Indeed, together with community participation, it is the component that features in all studies pertaining to social capital. It appears to be directly and strongly associated with a wide range of health and social outcomes. In sociological and epidemiological studies, for historical reasons, trust is typically measured using the one-item measure in the World Values Survey (*WVS*) (Inglehart & al. 1997). The wording varies between studies but commonly appears as: “Generally speaking, would you say that most people can be trusted, or that you can’t be too careful in dealing with people?” (Lochner et al 1999).

Difficulties with the World Values Survey measure of trust

There are methodological difficulties associated with this measure and thus with interpreting findings from studies that have used it (Berry & Rodgers 2003). Firstly, trust is a complex abstract concept, yet it is not defined. It is thus not possible to understand the nature of its association with other factors. Secondly, if trust is not defined, a reliable, meaningful method for measurement cannot be developed. This is because it is not possible to know exactly what is being measured. Thirdly, the *WVS* item contains two statements between which respondents choose. Yet the items are not mutually exclusive, and it would be feasible to agree or disagree with both. Using a “forced-choice” format thus results in a loss of information.

Fourthly, it is not sufficient to measure a complex concept with a single item: such concepts are dense, containing a multiplicity of subtleties. For example, trust is contextual, and depends on who is being trusted and in what situation. Trust is also dimensional, and it would be reasonable to expect that any relationship between trust and an outcome would be proportional to the degree of trust. Using a measure of trust that has a single item with a dichotomous response format cannot capture these issues.

Finally, using the term “trust” in a measure of trust is problematic because trust is a social value. Values reflect society-level consensus about desirable ideals towards

which society “should” strive (Braithwaite 1982). As trust is a social value, it can be assumed that there is community consensus that trust is a desirable feature of society and that people *should* behave in ways that promote trust. This has two implications for the use of the *WVS* item. Firstly, when asked directly about trust, people are likely to err on the side of agreeing because they know they “should”. Secondly, the value “trust” may be confounded with actually trusting other people, and it would not be possible to know which was behind the respondent’s answer.

An adequate measure of trust

Criteria for a satisfactory measure of trust would therefore include it being based on a theoretical definition of trust, and operationalised to assess specific aspects of trust as specified in its definition. No item in the measure would contain the word “trust”. It would be a multi-item scale that could tap different aspects of trust and it would not require respondents to choose between items. It would also have a multi-point response format allowing sensitive gauging of respondents’ degree of trust.

Such a measure of trust, the *Organisational Trust Inventory (OTI)* (Cummins & Bromiley 1996), was identified and compared empirically to the *WVS* item in a study using data from the present study to examine the relationship between social trust and general psychological distress (Berry & Rodgers 2003). As predicted, the *OTI* measure was a more powerful predictor of distress than the *WVS* measure, and offered a richer and more precise account of the relationship between trust and distress. For example, using the *OTI* showed that while, for all respondents, greater trust was associated with less distress, different aspects of trust were associated with distress for different generations of rural Australians.

Measuring community participation

A similar set of criticisms could be directed at the measurement of individual-level community participation in social capital research. Often participation is measured based on whatever items happen to be found during data mining. Alternatively, community participation is measured by presenting respondents with an ad hoc list of

activities and asking them to indicate which they do. The number of endorsements is added, and this constitutes the measure of participation. Frequently, measures of other components of social capital, such as social trust, having good relationships with others, or feeling safe in the community, are included in the checklist, and everything is added in together (eg., O'Brien et al 2004, Onyx & Bullen 2000). But in aggregating a large number and variety of measures of the components of social capital, current approaches to measurement may have failed to detect underlying factors and their interactions (Schudson 1996).

Thus the concept of trust, which is “treated in a homogenous and unhelpful way”, can be described in terms of its key components and tested empirically (Hudson 2004). With respect to social trust, such description and testing has been undertaken within Australian community samples (Berry & Rickwood, 2000; Berry & Rodgers, 2003).

Though it is a larger and more complex construct, community participation can be examined in exactly the same way. That is, the same criticisms as those made of the measurement of trust could be made of the way in which community participation has been measured in the epidemiological literature. Criteria for a satisfactory measure of volitional community participation would include it being based on a theoretical definition of participation that had been operationalised to assess specific aspects of the concept. It would have a multi-item scale, with several items for each component of participation that could tap all aspects of the concept in a way that would be empirically testable. Finally, it would have a multi-point response format allowing sensitive gauging of respondents’ degree of participation.

This matter is considered in depth throughout this thesis: measure design issues are discussed in Chapter 2, while Chapter 3 presents detailed statistical analysis of the elements, or “domains”, of volitional community participation. The ways in which these domains are related is discussed in detail in Chapter 4, and Chapter 5 examines the characteristics of respondents in terms of their patterns of community

participation and relevant other variables. Major findings about community participation, and their implications, are brought together in the concluding chapter.

In sum, suffice it to say here that I am not aware of any systematically developed, comprehensive measure of volitional community participation. Such a measure is needed, because community participation is a vital component of social capital, and without understanding participation, it is not possible to understand social capital. A properly validated measure of volitional community participation cannot, however, be constructed in one step. A preliminary contribution towards the development of such measure has therefore been made, and reported in this thesis.

SUMMING UP: THE NEED FOR INTERDISCIPLINARY RESEARCH

In researching complex issues with extensive implications, such as mental health, it is advisable to adopt a wide range of strategies, to bring together ideas from a variety of sources, and to combine knowledge from different disciplines (Hawe & Shiel 2000). That is, ideas from multiple fields of research need to be synthesised in order to develop more holistic hypotheses about the causes of and effective treatments for mental health problems. This is an aim of this thesis, but it is not a new approach.

Reflecting on a lifelong career in psychiatric epidemiology, Leighton described the rise and fall of interdisciplinary thinking and research in the social and biological sciences (Leighton 1994). Its rise began in the Great Depression years of the 1930s and, supported by keen government interest, continued rapidly throughout the Second World War. The fields of psychology, sociology and anthropology pooled their efforts, joined from time to time by psychiatry and economics. Research attention was paid to issues such as morale in the military and war industries and, for the purposes of waging psychological warfare, among enemy forces and their home front.

Fuelled by a desire to help end the war, researchers tried to explain and predict group behaviour, with particular emphasis on its “non-logical” nature. In doing so many

adopted an assumption that they were not so much attempting to uncover “laws” of human behaviour but more to delineate “probabilities” that certain outcomes would eventuate from the complex, chaotic, and dynamic systems of human interaction. A five-step scientific method of inquiry was systematically applied. The steps were (i) specifying a problem to be solved, (ii) operationalising the problem, (iii) designing a method for testing specific hypotheses, (iv) collecting data and, finally, (v) interpreting findings and feeding them into a new cycle of inquiry. Like a machine, it was thought that the whole would not work without all the parts in place and functioning harmoniously. A similar metaphor could be applied to the call for interdisciplinary research, in that using any one discipline alone in attempting to address a complex research problem would be like trying to make a car run without an engine.

But by the end of the 1960s interdisciplinary research was all but a thing of the past, “balkanised”, “in disarray and disorder” and “fragmented as never before”. The machine of scientific method had been pulled to pieces and its parts cannibalised. In its place, piecemeal, were a post-modern rejection of the idea that there was any objective reality that could be identified or measured, and “methodolatory”, theory-free and purposeless quantification of anything and everything. Worst of all, to Leighton, was the failure to perform the most important task in understanding human behaviour in groups, *revealing its underlying structures and dynamics*. To Leighton, identifying these underlying structures was not reductionist, but essential in getting to the heart of major research questions. For if researchers found what they expected, research would have gained a useful heuristic that could be applied to solving all sorts of specific questions. But if researchers did not find what they expected, they would have stumbled across something even more valuable, a “cutting edge of new discovery”.

A interdisciplinary approach to investigating community participation and mental health

In the spirit of contributing to research into the “underlying structures and dynamics” of human behaviour, and of adding to knowledge about mental health, this thesis

focuses on exploring the nature and operation of community participation and its associations with general psychological distress. The majority of the thesis focuses on investigating the underlying structures and dynamics of community participation, because they have not been well documented in previous research. Contemporary ideas about community participation have been drawn mainly from the fields of sociology and political science, and they have been supplemented by findings from early psychiatric epidemiology. The scientific methods of modern psychiatric epidemiology and psychology have informed the design, measurement, and analytic techniques for the study.

RESEARCH QUESTIONS

Two research questions have been addressed in this thesis. The first was: “Is volitional community participation a unitary concept, or does it include discrete components? If so, what are they, how are they related, and what are their underlying dynamics?” The second question was: “Is community participation related to mental health and, if so, what is the nature of this relationship?”. As there is no measure of community participation suitable for addressing these research questions, it has been necessary to develop one. To do this, it has been necessary to draw together the findings of previous research with respect to the possible components, structures, and dynamics of participation. These have been used as the basis for starting the instrument development process, as outlined above, and for addressing the first of the research questions.

WHAT IS KNOWN ABOUT THE COMPONENTS, STRUCTURES, AND DYNAMICS OF COMMUNITY PARTICIPATION?

Early psychiatric epidemiology has shown that the deep and lasting connections people make with significant others are very influential throughout their lives. This is especially true of those connections that link people from generation to generation, for “each generation is bound to fateful decisions and events in the other’s life course” (Elder et al 1985: p.40). Recent research into social capital has also

emphasised the importance of the particular experiences of different generations (Putnam 2000), and of their links to the adjoining generations. Less important connections are influential too, such as relationships with co-workers. Beyond these ties to specific others, there are countless different volitional activities people can undertake in their communities that bring them into contact with other community members.

Within social capital theory, community participation is an *inclusive* and a *volitional* concept. It incorporates a *wide range of types of activities* in which people participate *out of choice*, such as belonging to choirs, belonging to bird-watching clubs, taking part in voluntary organisations, discussing politics in coffee shops, writing letters to editors of newspapers, and voting in elections (Putnam, 1995).

With so many possibilities, perhaps certain activities, or certain types of activity, can be grouped in some way according to an underlying similarity or theme. Indeed, research in the field of social capital suggests certain groupings. These are informal social connectedness (Hendry & Reid 2000, Lee et al 2001, Putnam 2000), civic engagement (Kuchukeeva & John O'Loughlin 2003, O'Loughlin & Bell 1999, Putnam 1995, Putnam 2000), and political participation (Putnam et al 1993, Rich 1999, Schudson 1996). Each of these broad areas is linked to the others, and each is discussed in turn below.

Informal social connectedness

Informal social connectedness refers to the informal contact people have with family, friends, neighbours, and workmates (Putnam 2000, pp.93-115). It has been proposed that people's primary sense of connection comes from family and friends, and this is true for all age groups and for all generations (Putnam 2000: p.274). Family relationships are often the first and the longest-lasting connections that people make. Evidence suggests that the quality of these earliest relationships can influence people for the rest of their lives (Salzman 1996, Warme et al 1980, Zuroff et al 1999).

Though they may not have the strength and security of family ties, and have not filled the void created by the dissolution of family networks over the last century, friends are also very important (Putnam, 2000: p.108). People who do not have friends are often lonely, and this can contribute to the development of depressive symptoms (Nangle et al 2003). In cities, friends may even be more important than family, especially among the well-educated (Putnam 2000: p.96).

In America, another term for informal social connectedness is “schmoozing” (Putnam, 2000, pp.93-97). Schmoozing refers to having an “active social life” which is “spontaneous and flexible” (Putnam, 2000: p.94). Other typical activities that form part of informal social connectedness, or schmoozing, are holding dinner parties, sending greeting cards, going to bars with friends, and socialising with workmates out of hours. Schmoozing is found equally among all socio-economic groupings, but is more common among the young, the old, and people who are single and childless. It is also more common among those who rent accommodation or move home frequently. Contact with household members, with extended family, and with friends will therefore feature as important components of a measure of informal social connectedness.

Civic engagement

Civic engagement describes the many kinds of associations that people form as they participate in organised aspects of community life (Putnam 1995, Uslaner & Conley 2003). Specifically civic engagement comprises three types of organised voluntary association (Putnam, 1995; 2000: p.49). These are community-based, such as choirs and sporting clubs (Donovan, Bowler, Hanneman & Karp, 2004; Vromen, 2003), church-based, and work-based, such as labour associations. Community-based associations are the most heterogeneous and include social, civic, and leisure groups. Research suggests that people who engage in religious observance are inclined also to engage in other civic groups (Smidt 1999), though the two sometimes compete for members’ time (Edgell Becker & Dhingra 2001).

Volunteering is an important part of civic engagement, and there has been extensive commentary on whether levels of volunteering have risen or fallen over the last century (Putnam 2000). It has been suggested that volunteering has not declined, but that the nature and number of civic groups changes over time, influenced by social change. For example, the internet has spawned a “whole new voluntary world” (Rich 1999).

Another term for civic engagement, and the close relative of schmoozing, is “maching” (Putnam, 2000: pp.93-97). Machers organise community activities and associations, keep up-to-date with current affairs, attend meetings, do voluntary work, and give blood. Taking part in organised community activities, continuing education, religious observance, giving money to charity, volunteering, and taking a leadership role in the voluntary sector will therefore be the components of civic engagement in this study.

Political participation

The nature and degree of political participation in Australia, especially with respect to “youth participation” (Bessant 2004), are common topics of media coverage and academic attention. Political participation can be broadly defined as expressing opinions and exercising rights (Putnam, 2000: p.31). It can range from simple activities, such as discussing politics, to more complex and demanding activities, such as belonging to a political party (McAllister 1998). In studies completed prior to the 1996 general election in Australia, political participation was operationalised as discussing politics with others, talking to people about how they should vote, attending meetings or rallies, contributing money to a political party, and working for a party or candidate (McAllister, 1998).

In America, a more common example of political participation is voting in elections. But as voting has declined substantially in America over recent decades (Putnam, 1995), working in local groups to address community issues may now be a better indicator of political participation (Rich, 1999). This may also be the case in

Australia, where voting is compulsory and not therefore a sound indicator of political participation, certainly of activism. Making a formal vote in an election may be a better indicator of participation in Australia, as the compulsory voting system in Australia, as in other countries that have compulsory voting, is associated with greatly elevated levels of informal voting compared with voluntary voting systems (Mackerras & McAllister 1999).

Other examples of political participation include collective protest (which, it has been proposed, can give rise to enduring bonds, Putnam, 2000: p.153). In New Zealand, studies of political participation have included voting, signing a petition, discussing politics, boycotting products or services, joining legal demonstrations, writing to the newspaper, calling a talkback radio show, working on a political campaign, and involvement in unions, interest groups, and political parties (Donovan et al 2004). Among Generation Xers in Australia, three domains of political participation have been empirically identified. These include individual activities, involvement with a union or political party, and getting involved with activist groups (Vromen 2003). These comprise, respectively, activities such as (a) donating money, volunteering, boycotting products, contacting elected officials, and attending demonstrations or marches, (b) belonging to a union or political party, or doing campaign work, and (c) joining environmental, human rights, heritage, women's or other activist organisations.

Discussing politics is a common element of political participation (Donovan et al., 2004), as is taking an active interest in current affairs more generally. This is because knowledge and interest are preconditions for active involvement (Putnam, 2000: p.35). In Australia, as in other countries, people are generally poorly informed about politics (and have been since surveys on this topic began in the 1940s) (McAllister, 1998). For an Australian study, it would therefore be appropriate to assess general interest in politics and current affairs, rather than knowledge about specific issues, to avoid such low endorsement of political items in the study that the data cannot provide reliable estimates.

An alternative to direct forms of political participation such as those mentioned above is one that is undertaken in an abstract and distant manner. This would include activities such as participation via “cheque-book” membership of political groups whose headquarters may be in distant capital cities. In this case relationships are impersonal and the symbolic ties created in the minds of members are much more volatile than the personal ties generated by face-to-face participation (Putnam, 2000: p.154). In addition, some “direct mail” organisations engage in highly cynical “recruitment” of members (Putnam, 2000: p.157), a kind of behaviour unlikely to create the trust and reciprocity characteristic of social capital. Unlike the face-to-face associations, these direct mail organisations lose members very fast (Putnam, 2000: p.158). The members themselves, “consumers” of a cause, typically exhibit extreme and intolerant views that are not typical of members of a community rich in social capital (Putnam, 2000: p.158). Nevertheless, these are forms of political participation, and have to be taken into account.

Being connected to the local neighbourhood in a concrete sense, therefore, may not be a prerequisite of political participation (Schudson 1996). On the other hand, social capital does depend on tangible connections to the local community (Putnam, 1995; 2000). Giving money may be a legitimate way of contributing, even of having one’s political say, but it is different from holding office (Rich 1999). In sum, taking an active interest in current affairs, expressing opinions, engaging in cheque-book political participation, community activism, and collective protest will be components of political participation in this study.

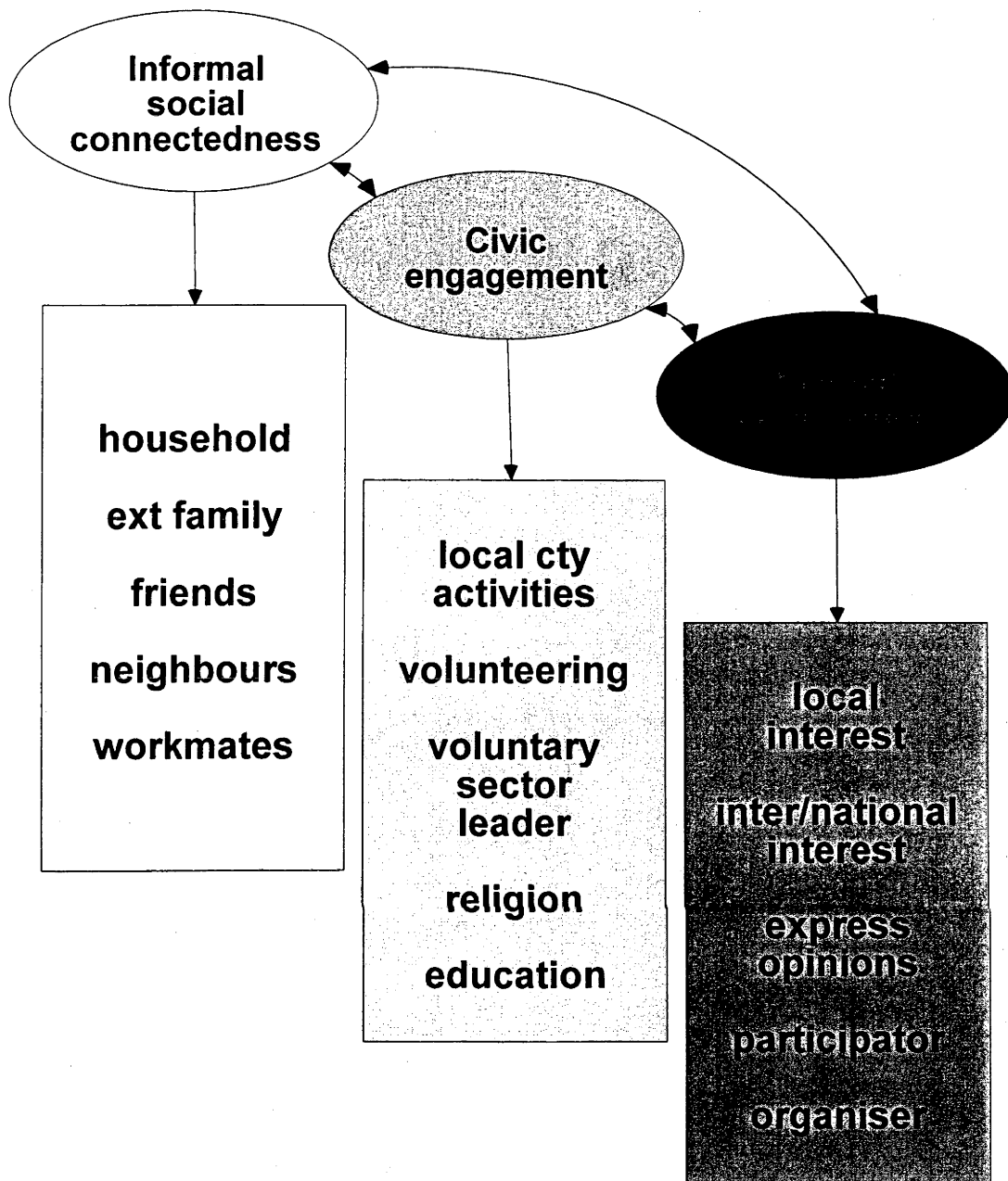


Figure 1.1. Hypothetical structure of volitional community participation.

Community participation is dimensional

It is proposed, therefore, that volitional community participation is made up of three overarching groupings of activities, and they are each linked to the other. Each of these groupings consists of a number of specific kinds of activities. This hypothetical structure of community participation is illustrated in Figure 1.1. Aside from the groupings of kinds of participation described above, the suggestion has also been made that participation is dimensional (Skocpol 2000). That is, different types of activity can be ordered, with informal and spontaneous activities located at one end of a continuum, and formal and organised activities located at the other (Putnam, 2000: p.22). In this thesis, the informal and spontaneous end of the continuum is referred to as the “private” dimension of participation, and the more formal and organised end is referred to as the “public” dimension of participation.

SUMMING UP: DOMAINS, SUPER-DOMAINS, AND DIMENSIONS OF PARTICIPATION

Community participation, therefore, appears to be made up of components, or basic building blocks of types of activities, such as contact with friends, volunteering, and community activism. In this thesis, these are called “domains” of volitional community participation. Based on the behaviour of “schmoozers” and “machers”, it seems that there may be relationships between some of these domains. That is, those who take part in one domain of community participation (such as schmoozing with friends) are more likely than other people to take part in related domains (such as schmoozing with workmates). These domains could thus be grouped into higher-order categories containing like activities, such as informal social connectedness, civic engagement, or political participation. The higher order categories have been named “super-domains” of volitional community participation. These super-domains are the three overarching components of volitional community participation.

In the same way that certain domains of participation are likely to be associated, it can be expected that the super-domains might also be associated, such that the

community contains people who are high participators and those who tend not to participate much. For example, people who have numerous informal social connections might be more likely than their less connected peers to get involved in sport or volunteering, which are part of civic engagement. Indeed, “schmoozing” and “maching” are related, even though they are largely independent types of activity (Putnam, 2000, pp.93-97).

Finally, the domains of participation may be ordered from private to public along an underlying “dimension” of participation. In sum, this thesis proposes that volitional community participation is not a unitary concept, but is a highly structured and dynamic phenomenon made up of discrete components that interact in a variety of predictable ways.

GENERATIONAL TRENDS IN LEVELS OF PARTICIPATION

The dynamics of community participation can also be analysed in terms of changes in the nature and levels of participation over time, such as from one generation to the next. These dynamics have been extensively described for America (Putnam 2000), but not for Australia. A brief review of intergenerational changes in the dynamics of volitional community participation in America is therefore presented with a view to examining evidence of the possibility of similar patterns in an Australian sample.

The major generations in the twentieth century were the “Long Civic Generation” and the “Pre-Boomers”, who were born between 1910 and 1940, the “Baby Boomers”, born between 1946 and 1964, the “Generation Xers”, born between 1965 and 1980, and the current young generation, born since 1981 (Putnam, 2000, pp.255-273), and commonly called the “Net Generation”.

The “civic drought of the Great Depression” (Putnam, 2000: p.16) gave way to the “civic-minded WWII generation” (Putnam, 2000: p.17). That is, the enduring values and beliefs of the *Long Civic Generation* were formed during the Second World War (Putnam, 2000: p.272) and this generation became then, and has remained,

“predisposed to civic responsibility” (Putnam, 2000: p.132). For example, though social capital has been declining in America steadily over the last century, there have recently been some increases in volunteering. These increases have been exclusively among people of the Long Civic Generation (Putnam, 2000: p.129). Long Civics are currently enjoying “enhanced leisure and vitality” during a long and healthy post-retirement period (Putnam, 2000: p.132). They tend to participate more in sport, to contribute more to civic engagement, and to be less obese than any other generation (Putnam, 2000: p.110).

Baby Boomers, who were young in the 1960s, are the “civic drop-outs” of the last century. According to Putnam, Baby Boomers volunteer much less than did their parents, though this is contested (Rich 1999). There are several possible explanations for any reduction in volunteering (Putnam, 2000: p.132). It may be because they have lost faith in government, or because they have grown up with television. Also, they went to larger and more crowded schools than their parents did, and these schools did not incubate participation to the same degree as did their parents’ smaller, more intimate schools. Further, though they have more years of education than the Long Civic Generation, Baby Boomers know less about politics.

Baby Boomers make decisions based on what they want to do, not based on what they think they ought to do (Putnam, 2000: pp.257-259). They are “tolerant”, “cynical”, and “laid-back”. Late born Baby Boomers are even more focused on themselves than older members of their generation, “free agents” who enjoy enormous personal choice, possibly at some expense to society as a whole.

Members of *Generation X* are even more individualistic, self-focused, and materialistic than their parents. Most of them have never lived in a community that has high levels of civic engagement. Indeed, in America, they spend an average of three and one-half hours a day alone. As a result, in their approach to living in society, Generation Xers are more personal and private than they are public and collective. Even more untrusting than their parents, Generation Xers’ interest in public affairs generally extends no further than scandal, personality, and sports

(Putnam, 2000: pp.260-261). Unlike the previous generations, Generation Xers do not value a happy marriage (Putnam, 2000: p.273), though perhaps they value a happy relationship. But despite their disconnectedness and “rampant individualism”, American Generation Xers volunteer more than do the previous two generations. Indeed, those who have argued that volunteering has not declined over the last century have proposed that younger generations volunteer in different ways from older generations, and that these new ways are not all detected by traditional research methods and data sources (Rich 1999).

SUMMARY OF CRITICISMS

Research into social capital appears to indicate that certain collective features of communities, such as high levels of volitional participation and high levels of social trust, impact favourably on a variety of important outcomes for individual community residents. As a shared property of the community, the resources of social capital are freely, if not equally, available to all. And while there is a “dark side” to social capital, it generally operates positively, and communities that are rich in social capital report lower levels of unwanted events such as violent crime, heart disease, and schizophrenia. The criticism that I make of these findings is that, enticing though the idea of social capital evidently is, it is not reasonable to draw such conclusions about social capital if it has not yet been adequately conceptualised, operationalised and measured. This is particularly problematic where components of social capital, such as volitional community participation and social trust, are central to the concept and thus to the analysis. It is not appropriate to comment on any relationship between social capital and health outcomes for individuals and communities until this work has been done.

Further, it is not possible to make claims about causality, even implicitly (such as in Putnam’s definition of social capital), when the kinds of research strategies (such as longitudinal analyses, between groups experimental designs, and case controlled studies) have not been employed. Taken together, these are grave weaknesses in social capital research as it is used in psychiatric epidemiology. My criticism is thus

that, with such significant methodological weaknesses, little can be said about the relationship between social capital and mental health.

AIMS OF THIS THESIS

The selective review presented in this Chapter has shown that social capital is not a unitary phenomenon (Hawe & Shiell, 2000), but a way of describing a set of interlocking social processes (McKenzie 2003). This thesis is an attempt to describe some of the components and dynamics of social capital, and to investigate their relationship to mental health. It thus has two broad goals. These are to describe the elements, structures and dynamics of volitional community participation, and to describe the associations between community participation and general psychological distress. Findings have been interpreted in terms of relationships among concepts, and also in terms of intergenerational differences in the nature and level of participation.

At a general level, in meeting the aims of this thesis, a further aim is to draw on ideas and approaches from different disciplines to attempt to explore the “underlying structures and dynamics” (Leighton 1994) of volitional community participation. This is attempted in the hope of contributing to the development of hypotheses about the possible causes of, and approaches to addressing, mental health problems in Australian communities. In particular, I aim to contribute to addressing two major weaknesses in social capital research as it is used in psychiatric epidemiology. The first is that some of its key concepts have not been adequately conceptualised, operationalised and measured. I have focused here on two important examples, volitional community participation and social trust. Secondly, the relationship between key concepts in social capital has not been established, including possible causal relationships. This thesis therefore also aims to contribute to clarifying the relationship between community participation and trust. Finally, I aim to build on my clarification of the nature of community participation, and the nature of the relationship between community participation and social trust, to contribute to the

description of the nature of the relationship between these key elements of social capital and their relationship, in turn, with general psychological distress.

SUMMARY OF HYPOTHESES

The hypotheses for this study are summarised in Table 1.1, which also indicates which chapters in the thesis address each hypothesis. Drawing together the propositions that have been put forward in this chapter, the following findings are expected. Firstly, it will be empirically demonstrable that volitional community participation is not a unitary concept, but is made up of a number of separate “domains”. This is Hypothesis 1. Domains that have been identified here include “contact with household members”, “contact with extended family”, “contact with friends”, “contact with neighbours”, “social contact with workmates”, “organised community activities”, “religious observance”, “learning and education”, “volunteering”, “leadership in the voluntary sector”, “giving money to charity”, “interest in local affairs”, “interest in national and international affairs”, “participating in political groups”, and “organising political action”. Secondly, though the domains of participation are discrete, they are nevertheless part of the larger concept of volitional community participation. Thus they will be associated with one another. Hypothesis 2 is therefore that there will be small, but statistically significant correlations between the domains of participation.

It has also been proposed that the domains of participation can be grouped empirically into “super-domains” of volitional community participation. Hypothesis 3 is therefore that the domains of participation will belong to one of three super-domains of participation, “informal social connectedness”, “civic engagement”, or “political participation”. Because of the expected association between “schmoozing” and “maching”, Hypothesis 4 is that the super-domains of community participation will be modestly positively correlated. It has also been proposed that domains of participation can be ordered from private to public, and this is Hypothesis 5. Finally, with respect for the underlying structures and dynamics of participation, it has been proposed that there are different types of people in the community, such as

“schmoozers” and “machers”. Hypothesis 6, therefore, is that respondents in the study can be categorised according to their patterns of participation.

Turning now to hypotheses about the relationships between volitional community participation and mental health, it has been proposed that higher levels of social capital are associated with lower levels of mental health problems. Thus Hypothesis 7 is that domains of participation will be significantly negatively correlated with psychological distress, such that higher levels of participation are associated with lower levels of distress. Hypotheses 8, 9 and 10 reflect the proposition that trust mediates the relationship between community participation and mental health. Hypothesis 8 is that domains of participation will be positively associated with trust, such that higher levels of participation are significantly associated with higher levels of trust. Hypothesis 9 is that trust will be significantly negatively associated with general psychological distress, that is, higher levels of trust are associated with lower levels of distress. Finally, Hypothesis 10 is that trust will mediate the relationship between participation and distress.

Two further propositions have been put forward in this chapter, which are that women participate in the community more than men do, and that older generations participate more than do younger generations. Hypothesis 11 is therefore that levels of participation among women will be significantly higher than they are among men, while Hypothesis 12 is that levels of participation among older generations will be significantly higher than they are among younger generations.

Two final hypotheses can be derived from these propositions. As participation and trust are expected to be positively associated, women will report significantly higher levels of trust than will men (Hypothesis 13), and older generations will report significantly higher levels of trust than will younger generations (Hypothesis 14).

The chapters in this thesis are organised around addressing these hypotheses.

Table 1.1. Summary of hypotheses, and the chapters in which the hypotheses are addressed.

Hypothesis number	Hypothesis	Chapter
1.	Community participation is not a unitary concept, but is made up of separate “domains”.	3
2.	There will be small, but statistically significant positive correlations between the domains of participation	3
3.	The domains of participation will belong to one of three super-domains of participation, “informal social connectedness”, “civic engagement”, or “political participation”.	4
4.	The super-domains of community participation will be modestly positively correlated.	4
5.	Domains of participation can be ordered from private to public.	4
6.	Respondents in the study will be able to be categorised according to their patterns of participation.	5
7.	Domains of participation will be significantly negatively correlated with psychological distress.	6
8.	Domains of participation will be significantly positively associated with trust.	6
9.	Trust will be significantly negatively associated with general psychological distress.	6
10.	Trust will mediate the relationship between participation and distress.	6
11.	Levels of participation among women will be significantly higher than they are among men.	3
12.	Levels of participation among older generations will be significantly higher than they are among younger generations.	3
13.	Women will report significantly higher levels of trust than will men.	6
14.	Older generations will report significantly higher levels of trust than will younger generations.	6

CHAPTER 2: METHOD

CHAPTER SUMMARY

This chapter describes how The Eurobodalla Study was designed and how the data were collected for this thesis. The chapter starts with a description of the Eurobodalla Shire, and then explores the rationale for conducting a mail survey in this rural location. This is followed by a description of the participants, an explanation of how they were sampled, and why a stratified random approach to sampling was chosen. A discussion of response rates, and the representativeness of the sample follow. A description of the measures used is then presented, including an explanation of how measures of community participation were developed. The chapter concludes with a discussion of how the data were screened and how missing data were handled.

THE EUROBODALLA SHIRE¹⁰

The Eurobodalla Shire covers over 3000km² of the New South Wales south coast, including 110km of coastline. Nearly 80% of this area is national park or state forest, and the climate is mild. People live mainly along the coastal fringe in three main towns, though about one-fifth are spread across more than fifty other townships or rural localities. The Eurobodalla Shire's main industries are retail, tourism, manufacturing, agriculture, service industries, dairying, forestry, and fishing. Local social planning consultation conducted by the Eurobodalla Shire Council indicated that people like living in the shire. This liking was based on lifestyle factors, such as the clean environment, pristine beaches, bush land and, importantly, what were described as small, safe, family-friendly communities.

¹⁰ Information provided by the Eurobodalla Shire Council Social Planner, whose assistance is gratefully acknowledged.

Only half of the shire's ratepayers reside in the shire, while another third live in the two closest capital cities, Canberra and Sydney. The permanent population of the Eurobodalla Shire is growing at 2.2% a year, compared with a state average of 1.1%, and was about 38,000 in 2001 at the time the data were collected. Perhaps reflecting its status as a popular retirement destination, the population is heavily weighted towards the older age groups, with 22.5% aged over 65 years in 2001, compared with a state average of 14% in 2001. Based on data from the 2001 Census, there were 1378 people who identified as Indigenous Australians living in the Shire, or 4.2% of the Shire's population.

Together with the age profile of the Shire, limited employment and few tertiary educational opportunities for young people might contribute to explaining why only 8.9% of the population were aged 15-24 in 2001, compared with 13.3% statewide. In March 2000, 17% of adults were unemployed and, with many of the employment opportunities part-time or casual and seasonal, many of those in paid work were underemployed and not able to earn a living wage. In 1996, 27% of the population received social security benefits of some type, and median income was about 70% of the state average. However, over half of people own their own homes, compared with a state average of 41%. Based on 2001 Census data, among people aged 15 to 75 years in the Eurobodalla Shire, only 26.7% had completed educational qualifications beyond Year 12, far fewer than for the State as a whole (38%). Thus residents of the Eurobodalla Shire were less highly educated, on average, than most residents of New South Wales.

Reliable data on the level of provision of services such as transport, medical, and mental health services were not available at the time of writing. However, feedback from respondents indicated a perceived shortage of services was a significant source of concern for many.

CHOICE OF STUDY LOCATION AND METHODOLOGY

The study was conducted in the Eurobodalla Shire for two main reasons. One reason was that there is growing research and public policy interest in mental health outcomes for people living in rural and remote parts of Australia (eg., Fuller et al 2004, Habibis et al 2003), particularly with regard to the considerable socio-economic disadvantage and poor access to services that accompany living far from population centres (Caldwell et al in press). That is, those living in rural areas experience a very high level of disadvantage (Alston 2002) and thus high levels of need. They also find it difficult to access services compared with their urban peers (Johnstone et al 2002). As a rural locality, the Eurobodalla Shire presented an interesting combination of characteristics. Despite its beautiful coastal location and attractive lifestyle, it is nevertheless a poor and poorly serviced rural area.

The other reason that this study was conducted in the Eurobodalla Shire was that the Eurobodalla Shire Council has an interest in promoting social research in the Shire. The Council was therefore willing to provide financial and administrative support for this study, without which the study could not have been conducted, and at the same time to allow complete academic freedom in the design of the study and dissemination of the results.

A mail survey was conducted

Survey methodologies in which data are collected from individuals are an acceptable way to conduct research into social capital (Edwards & Foley, 1998), and it was appropriate to conduct a survey for this study. Conducting a survey by mail had additional benefits with respect to the research goals. It permitted the collection of the large quantity of data required for many of the analyses, and allowed data to be collected in a format that was appropriate for the kinds of analyses that were planned. Further, compared with telephone or face-to-face interviewing, it was an inexpensive and fast way to collect data from the population of interest, and to reach people living in rural and somewhat difficult to access localities.

PERMISSION TO CONDUCT THE STUDY

Permission to conduct this study was granted on 16 July 2001 by the Human Research Ethics Committee of The Australian National University (Appendix 2.1). Following this, on 30 July 2001, the Eurobodalla Shire Council gave its agreement for the study to be conducted, and also its agreement to provide administrative and financial support the study (Appendix 2.2). On 2 August 2001, the Australian Electoral Commission gave its permission to draw a sample for the study from the electoral roll for Eden-Monaro (Appendix 2.3).

PARTICIPANTS

Participants were 963 residents of the Eurobodalla Shire in southern New South Wales, Australia. The sampling procedure was designed to recruit equal numbers of women and men to the study. With 500 women (51.9%) and 463 men (48.1%), women were very slightly, but not significantly, over-represented in the sample ($\chi^2=1.42$, $df=1$, $p=.233$). Participants were aged 19 to 97 years ($M=52.78$ years, $SD=18.24$, $Md=52$ years).

Sampling

With factor analyses among the statistical methods intended for this study, it was not only important to gather enough data for the planned analyses, but also to ensure that the sample provided a spread of scores across the ranges of the variables and concepts measured (Tabachnik & Fidell 2001: p.587). With the expectation that types and levels of participation would vary between women and men and different generations, it was essential to collect data from roughly equal numbers of women and men and from a wide range of adult age-groups. A stratified random general population sample was therefore taken.

Sample frame

With the permission and assistance of the Australian Electoral Commission (Appendix 2.3), a stratified random sample was drawn from the electoral roll for the relevant parts of the Eden-Monaro electoral district, within which the Eurobodalla Shire falls. In Australia, where registration as a voter and voting in elections are

compulsory, electoral rolls are an accepted source for general population sampling. Only people whose mailing address was in the Eurobodalla Shire were selected. The electoral roll data were made available by sex and in eight ten-year age blocks from 18 to 97 years. These age blocks were aggregated into generations, for the reasons described in Chapter 1. In this thesis, as in Putnam's research in America, the Long Civic Generation and the Pre-Boomers have been grouped together and called Long Civic Generation. The 29 members of the Net Generation in this sample have been grouped in with the Generation Xers. For this study, the youngest adult generation, "Generation X", included people born from 1961 to 1985. For sampling purposes, this translated most closely to the groupings of 18-27 year olds and 28-37 year olds. The next generation, the "Baby Boomers", included people born from 1946 to 1960 and translated most closely to the 38-47 year-olds combined with the 48-57 year-olds. Finally the "Long Civic Generation" included people born up to 1945. This generation translated most closely to four remaining ten-year age brackets, 58-67, 68-77, 78-87 and 88-97 year-olds.

From each of these three generations, 500 women and 500 men (3000 people in all) were then randomly selected and approached to participate in the study. Details of the procedure followed are presented in the next section. Response rates among men of working age were low, and women were over-represented in the sample. In order to compensate for this imbalance, a further 1200 men from Generation X and the Baby Boomer generation were sampled in a second round. Details of the sample are provided in Table 2.1. A discussion of response rates, together with issues to do with the quality of the sample and the generalisability of the results, are discussed later in this chapter and in Chapter 7.

Table 2.1. Response rates¹¹ by sex and generation.

Generation	Number approached			Participated (usable data)								
	Female	Male	Total	N	R/rate (%)	Female R/rate (%)	N	R/rate (%)	Male R/rate (%)	N	R/rate (%)	Total R/rate (%)
<i>Generation X</i>	500	1100	1600	144	28.8	28.8	117	10.6	10.6	261	16.3	16.3
<i>Baby Boomers</i>	500	1100	1600	192	38.4	38.4	172	15.6	15.6	364	22.8	22.8
<i>Long Civics</i>	500	500	1000	164	32.8	32.8	174	34.8	34.8	338	33.8	33.8
TOTAL	1500	2700	4200	500	33.3	33.3	463	17.1	17.1	963	22.9	22.9

¹¹ Rates not adjusted for undeliverable study materials, or for case deletions following data screening.

Encouraging residents to take part in the study, and providing feedback

Community involvement and a high response rate were sought for this study, but recent research indicates that response rates to mail surveys have been falling (Clark et al 2001). Research into mail survey methodologies has indicated that response rates can be increased by identifying to potential participants that the research has university sponsorship, by pre-notifying potential participants by mail that they have been selected to take part in a study, by postcard follow-up after the questionnaire has been sent, and by using coloured paper for the questionnaire (Fox et al 1988). Fox et al. also reported that using first-class outgoing postage increased response rates, while a New Zealand study indicated that there was no difference in response rates depending on whether the outgoing mail was stamped or franked (Brennan 1990). A review of response rates achieved in 292 randomised control trials presents an analysis of 75 different ways of increasing response rates to mail surveys (Edwards et al 2002). Though this review was published after data had been collected for this study, its findings were consistent with those from earlier reviews reported above, and indicated that numerous strategies can be successfully employed to increase response rates to mail surveys in medical research.

In order to attempt to increase the response rate to the survey, prospective participants in this study were informed that a researcher from The Australian National University was conducting the study, they received a pre-notification letter and a reminder postcard, and the cover of the survey booklet was printed on coloured paper. Outgoing mail was franked, and a prepaid return envelope included in the package.

Media support for the research

In addition, shortly before questionnaires were mailed, the two local free newspapers, and the two local pay papers, published articles introducing the study, encouraging people to participate, and advising people of how they would be able to access its findings. The local radio stations, including the local youth station, also promoted the study by interviewing the researcher and by reporting the study in the news. Media liaison, including the distribution of media releases, was initiated with the assistance of

the Eurobodalla Shire Council. Journalists followed up on material in media releases directly with the researcher. A summary of media contact appears in Appendix 2.4.

Procedure

Participants completed a self-report questionnaire containing 241 items, which took about 60 minutes to complete. The data that have been analysed in this thesis are a sub-set of the data collected for the study as a whole. The relevant sections of the questionnaire are reproduced in Appendix 2.5. Data were collected twice, from two different sets of participants, each time over a six-week period. The first round of data was collected in September and October 2001, and the second round in April and May 2002.

Introductory letters were sent to the initial round of 3000 possible participants, followed a week later by a package containing the questionnaire, a covering letter, an information sheet, and a pre-paid return envelope. The introductory letter is included in Appendix 2.6, the covering letter is re-produced in Appendix 2.7, and the information sheet is in Appendix 2.8. One week after the study materials had been sent, the newspapers and radio stations broadcast reminders to people to participate in the study. A similar procedure, also with media support, was followed when the second round of 1200 possible participants was approached, but no reminder postcard was sent.

Feedback on the findings of the study

Following preliminary analysis of the data, a written interim report was made to the Eurobodalla Shire Council in December 2002¹², and preliminary results of the study were reported in the media, as summarised in Appendix 2.4. A journal article has been published from these data (Berry & Rodgers, 2003), a copy of which was made available to the Council and is included in Appendix 1.3. With the Council's permission, their support of the study was acknowledged in the article. Numerous presentations have been made on the findings of the study, and these are listed in Appendix 2.9.

¹² For reasons of length, a copy of this report is not included in the Appendices for this thesis.

RESPONSE RATES AND REPRESENTATIVENESS

The following sections report on response rates and associated issues. These include numbers of respondents required for this study, overall response rates, response rates by sex and age group, and the representativeness of the obtained sample. Data collected in the first round are compared with those collected in the second round.

Response rates

Required sample size

As factor analyses were among the planned analyses for this thesis, it was important to collect sufficient data to meet the sample size requirements for factor analysing (details are given in Chapters 3 and 4; see also Tabachnik & Fidell, 2001, p.588). In this case, a sample size of at least 600 was required, and more were desirable. For mail surveys such as for this study, a response rate of around 20% was expected (Clark et al 2001), perhaps somewhat less since there was limited follow-up, and the questionnaire was very long. In order to obtain a sample of at least 600 respondents, it was therefore necessary to approach at least 3000 residents of the Shire.

Responses received

In all, 4200 people were invited to take part in the study, as described above, and a final usable sample of 963 respondents was obtained. Following the first mailing, 758 people returned questionnaires, and another 100 questionnaires were returned following the reminder post-card. A further 119 men returned questionnaires when the additional working-age men were sampled. In all, 977 people returned questionnaires. One hundred and three of the reminder post-cards were returned, stating that the addressee was not known at that address. This indicated that some of the potential participants in the study had not been reached.

Using electoral rolls to sample from the general population

This is a common problem in mail surveys using publicly available databases that are difficult to keep up-to-date (Harvey et al 2003), such as the Australian electoral rolls. In Australia, it is the responsibility of individual citizens to keep their electoral roll details up-to-date, and variation can be expected in the consistency with which people do this. In addition, the names of people who have left the electoral district can remain

on the electoral roll for some time after the person has left the electoral district. The Australian Electoral Commission runs nationwide public awareness campaigns before each federal election to advise citizens of their responsibility to vote and to encourage them to register as voters. The electoral rolls are thus more accurate shortly before a federal election. The last federal election before data for this study were collected was held in October 1998, some three years before data collection. In such circumstances, it is difficult to know how many packages may have failed to reach their intended recipients, but it can be assumed that the list of names and addresses for possible participants was not completely accurate.

Studies investigating rates of undeliverable research materials

There has been some research into the issue of the proportion of packages of study materials that do not reach the intended recipients. A recent Canadian study investigating the accuracy of public records of addresses found, after extensive searching using publicly available sources, that around 5% of possible respondents in a mail survey were untraceable, and could not have received the study materials (Harvey et al 2003). They proposed that the study response rate could be adjusted accordingly. The practice of adjusting response rates has been supported by other researchers who have investigated response rate issues (Asch et al 1997). In Australia, Mond and his colleagues (Mond et al 2004) reported that the proportion of mail survey materials that were undeliverable in a study conducted recently in the Australian Capital Territory was more than 11%. Of relevance to the present study, this finding suggests that the proportion of undeliverable materials in Australia might currently be higher than that reported in the Canadian study. This would be particularly the case where electoral rolls may be out-of-date. Should delivery failure rates of between 5% and 11% be applied to the present study, which was conducted in similar circumstances to both studies cited, this would suggest that between 210 and 462 packages overall might not have reached their intended recipients.

Response rates for the Eurobodalla Study

Based on these figures, and allowing for cases that were deleted from the data set, an adjusted response rate for the first round¹³ of participants would be between 29.2% and 31.2%, well above what was expected for this study. For response rates by sex and generation, for which it was not possible to make any adjustments, unadjusted rates have been reported. That is, the reported response rates do not take account of packages known to have failed to reach their targets, nor of the 5-11% likely not to have reached their targets, and they do not allow for the fourteen cases deleted from the data set. The unadjusted response rates for the present study were as follows: around 33% for women, 17% for men, 16% for Generation X, 23% for Baby Boomers, 34% for Long Civics, and around 23% overall. The differences in response rates between generations are particularly interesting in the context of this being a study of volitional participation.

The final, overall response rate can be adjusted for cases that were deleted from the data set and for the 103 reminder postcards that were returned to the sender and are therefore known not to have been deliverable. The final overall response rate for round-one participants (that is, excluding the extra working-age men sampled in round two), adjusted for case deletions and undeliverable materials, was 28.7%.

The response rate for the whole sample, including both rounds of data collection, was 23.8%. As I have indicated, this response rate is artificially low because the proportion of undeliverable materials has likely been substantially underestimated, and because data collection included heavy over-sampling of the low response-rate groups (working-age men). In addition, given that there was a lengthy questionnaire and the study was conducted on a very low budget, including very limited follow-up (no follow-up for the second round of data collection), the response rate for this study was acceptable. Nevertheless, the extent to which results can be generalised to the rest of the community, or to other communities, has to be questioned. This issue is addressed in Chapter 7.

¹³ Figures for the first round of data collected, rather than for the whole sample, have been cited because the first round was a general population sample, whereas the second round was a sample of a low response rate group. First round figures are therefore likely to generate more accurate estimates of the population response rate.

A comment on response rates by sex and age group

An interesting aspect of the response rates was the striking difference between the response rates for women and men, and of different generations (Table 2.1). These response rates show women participating at about twice the rate of men, and the Long Civic Generation participating at about twice the rate of Generation X respondents. The lowest response rates were achieved among men aged 18-27 (8%) and among women aged 88-97 (9%), and the highest among women aged 58-67 (61%).

Representativeness

Based on the sample provided by the Australian Electoral Commission, in 2001, when the data were collected, members of the Long Civic Generation comprised 43.9% of the sample frame for the study. They comprised 35.1% of respondents. Baby Boomers constituted 37.2% of the population, and comprised 37.8% of respondents. Members of Generation X comprised 18.9% of the population, and 27.1% of the sample. Thus, as intended in the sampling procedure, members of Generation X were over-represented in the sample, and members of the Long Civic Generation under-represented, compared with the distribution of age groups within the population of the Shire.

Indigenous Australians represented about 4.2% of the population of the Eurobodalla Shire in 2001, and were 8.7% of the sample. Thus, though there had been no over-sampling, Indigenous Australians were represented in the study at about twice the rate that they were in the local communities of the Shire. With 84 usable responses from Indigenous Australians, there were enough Indigenous respondents in the sample to examine their data separately in some of the analyses.

Sample statistics on educational level were broadly consistent with population parameters for the region available from the Australian Bureau of Statistics Census data for 2001. In terms of education, the majority of respondents (N=483, 50.2%) reported that they had completed high school or less. Exactly comparable data were not collected. However, with 50% of respondents educated no further than high school, this was not a highly educated sample, and was consistent with Census data

that indicated that substantially fewer residents of the Shire had completed Year 12 than had on average in New South Wales.

Socio-demographic characteristics of each round of respondents

With regard to when respondents participated in the study, there were no differences between those who participated in the study before the reminder postcard was sent, those who responded following the reminder postcard, and the new sample of men who participated as part of the second round of data collection. The three groups were compared using chi-squared statistics with respect to level of education, paid work or study status, Indigenous status, being born overseas, having dependents, having a health care card, and living alone. All comparisons were between working-age men, since the second round participants only included working-age men. The three groups did not differ significantly in terms of any of these socio-demographic factors.

MEASURES AND QUESTIONNAIRE DESIGN

The “opportunistic” use of existing survey data is not considered an acceptable way to conduct research into social capital (Edwards & Foley 1998). Indeed, data mining using existing surveys, as is common in social capital research, fails to properly operationalise the complexity of the concept. New, purpose-built instruments are needed which properly test a coherent theory. This survey was therefore purpose-designed to address the research questions described in Chapter 1. That is, it was designed to enable me to explore the domains, super-domains and dimensions of volitional community participation and to evaluate the relationship between general psychological distress and community participation. A description of which measures were selected, and how new measures were developed follows. I have described the new measures of different types of participation first, then the measures of trust and psychological distress and, finally, the socio-demographic data that were collected.

Volitional community participation

Description of the measure

As far as I am aware, there is no systematically developed and comprehensive measure of volitional community participation that would have been suitable for use in this

study. Respondents' perceptions of how often they participated in various kinds of non-essential activity in the community were therefore assessed using a measure specifically developed for this study. The measure comprised a total of 67 items. These were divided roughly evenly among three broad areas of participation, that is, among the three super-domains of volitional community participation outlined in Chapter 1. The measure contained 20 items tapping informal social connectedness, 22 items tapping civic engagement, and 25 items tapping political participation. Within each of these were sub-sets of items tapping each of the hypothesised domains of participation. A full list of the items in the measure is presented in Table 2.2.

Within *informal social connectedness* were five domains, each with four items. These were contact with household members, contact with extended family, contact with friends, contact with neighbours, and social contact with workmates. Household members were defined in the questionnaire as "significant others who usually live with you (eg., your partner, children, parents, or other relatives). Extended family was defined as "any relatives or significant others who *do not* live with you". Neighbours, friends and workmates were not defined in the questionnaire.

Within *civic engagement* were five domains. These were organised community activities (four items), learning and education (four items), religious observance (four items), volunteering (three items), leadership in the voluntary sector (four items), and giving money to charity (three items). In the questionnaire, the definition of organised community activities included religious observance, and learning and education. They were defined as "any activities you do *in organised groups* for fun, education, social contact, or worship – eg., sport (player, supporter, children's sport), Italian club, bushwalking, support groups, RSL, drama groups, railway society, choirs, reading circles and playgroups". Volunteering, leadership in the voluntary sector, and giving money to charity were grouped in the questionnaire under the heading "community service and volunteering". It was defined as "any kind of community work you do without being paid – eg., fundraising walks, Rotary, working bees, meals-on-wheels, selling raffle tickets, shopping for a sick neighbour, community boards, cooking sausages at a fete, Neighbourhood Watch, Red Cross".

Table 2.2. Sixty-seven items tapping domains and super-domains of volitional community participation.

Super-domains and domains	Item
Informal social connectedness	
Contact with immediate household	<p>I see people in my immediate household at the start of my day</p> <p>Members of my immediate household are home when I am home.</p> <p>I spend my spare time with my immediate household</p> <p>I eat my main meal with members of my immediate household</p>
Contact with extended family	<p>I spend time doing things with my extended family</p> <p>I talk on the telephone to people in my extended family</p> <p>I see members of my extended family in person</p> <p>I prepare or eat meals with people in my extended family</p>
Contact with friends	<p>I make time to keep in touch with my friends</p> <p>My friends come over to my place or I go to theirs</p> <p>I talk to friends on the telephone or send them emails or letters</p> <p>I give my friends gifts such as birthday presents</p>
Contact with workmates	<p>I go to work social events if I'm invited</p> <p>I do things at the weekend with people from work</p> <p>I spend my lunch or tea breaks with my workmates</p> <p>I socialise with my workmates before work, after work or during breaks</p>
Contact with neighbours	<p>I chat with my neighbours "over the fence" or "in the stairwell"</p> <p>My neighbours tell me their news or I tell them mine</p> <p>My neighbours come over to my place or I go to theirs</p> <p>I talk with my neighbours about what's going on in our neighbourhood</p>

Civic engagement

Organised community activities

- I attend at least one group that organises activities in my community (eg, choir, sport)
- I take an active part in organised group activities (eg, choir, sport)
- I go to rehearsals, training sessions, meetings or other organised group activities (eg, choir, sport)
- I pay membership fees to a group that organises activities in my community (eg, choir, sport).

Religious observance

- I go to religious services for special events like weddings
- I visit places of worship as a sightseer or tourist
- I make time to attend services at a place of worship
- I go to prayer meetings with others who share my beliefs

Learning and education

- I go to courses or evening classes whenever I can
- I participate in distance learning (eg, by correspondence, via the internet)
- I study, do assignments or sit exams for a certificate, diploma, degree or other qualification
- I take opportunities in my community to try out or learn new things

Table 2.2 (continued). Sixty-seven items tapping domains and super-domains of volitional community participation.

Super-domains and domains	Item
Civic engagement (continued)	
Volunteering	I do casual unpaid voluntary work or I help out for free locally
	I regularly renew my membership with a voluntary or not-for-profit group
	I do voluntary or charity work for local not-for-profit groups
Leadership in the voluntary sector	If I'm in a group doing voluntary work or helping out for free, I take responsibility for getting things done
	I join organising committees for voluntary or not-for profit groups
	If I do voluntary work or help out for free, I take on jobs like secretary, coordinator or treasurer
	When it comes to voluntary work or helping out for free I'm one of the leaders or organisers
Giving money to charity	I subscribe to newsletters, magazines or papers published by a voluntary group or charity
	I give money to charity if I'm asked
	If I'm asked, I buy products sold by charities (eg, Blind Society Christmas cards).
Political participation	
Interest in local affairs	I read a free local newspaper
	I follow current affairs <u>about my community</u> on a local or commercial radio station
	I read the Southern Star or the Bay Post
	I watch current affairs or news programs about <u>local</u> events on TV
Interest in national and international affairs	I listen to the radio for news about <u>national</u> or <u>international</u> affairs
	I read articles in the paper about <u>national</u> and <u>international</u>

affairs

I watch national or overseas news and current affairs on television

I read articles in magazines about current affairs all over Australia and overseas

Expressing opinions

I talk about current affairs with my friends or family

I do things like wear badges or display bumper stickers to do with issues in current affairs

I write to local politicians to tell them what I think about things

If necessary I talk to a local politician about issues in current affairs

At election time I do things like display how to vote posters

I go on demonstrations or marches

I have opinions on issues in current affairs or the news

I write a letter to the newspaper or contact a radio station if

I want to say what I think about current affairs

I sign petitions if I agree with the cause

Table 2.2 (continued). Sixty-seven items tapping domains and super-domains of volitional community participation.

Super-domains and domains	Item
Participating in political groups	I join unions, political parties or groups that are for or against something
	I go to meetings of a group involved in current affairs in my community
	I go to meetings of a union, political party or a group that's for or against something
	I hand out leaflets for a group involved in current affairs
Organizing political action	I arrange meetings, send out information or help with other administrative tasks for a group involved in current affairs
	I contact other members of my current affairs group to remind them to come to meetings, pay their dues etc
	I encourage others to join a group involved in current affairs
	I get involved in organising a current affairs group

Finally, *political participation* contained five domains. These were interest in national and international affairs (four items), interest in local affairs (four items), expressing opinions (nine items), participating in political groups (four items), and organizing political action (four items). These were grouped in the questionnaire under the heading “keeping up with current affairs”. This was defined as “knowing what’s going on in the community and trying to help make a difference. This could simply mean taking an interest in current affairs – or even being in a group involved in current affairs, like a union, political party, or a group that’s for or against something (eg., reconciliation, commercial developments, gay rights, changes to taxes)”.

Approach to development of the measure

Development of the measure of volitional community participation was theory-based. That is, decisions about what kinds of items to include, and how to measure them, were

based on information and ideas available from previous research. This matter has been discussed in Chapter 1, so only a brief review is included here.

Social capital research emphasises that the kinds of community participation that are important in building stocks of social capital are those that are non-essential, or non-obligatory. For this reason, only volitional kinds of participation were included in this measure. Thus, while participating in the paid workforce is a very important and common form of social participation, it was not included in this measure because most Australians of working age are not at liberty to choose not to do it. Activities such as shopping, obtaining medical services and using public transport were excluded for the same reason. That is, they are all ways of participating in society that most people are not free to avoid. Voting in elections, which is an important indicator of community participation in some countries (eg., Putnam 2000), was also excluded because voting is compulsory in Australia.

Thus the measure excluded non-volitional types of participation. But, within this scope, the approach to item selection was inclusive. This is because, in order to explore the true underlying structure of a complex construct (for example, via exploratory factor analyses), all relevant aspects of that construct have to be included in the analysis (Tabachnik & Fidell 2001: p.587). Such analyses are capable of identifying redundant items and, if appropriate, the items may be deleted later. That is, it is not problematic to include too many items, because redundant items can be identified and deleted, but it is problematic to include too few. It was thus desirable to include more, rather than fewer, items in the instrument, and all types of volitional community participation that could be identified were included.

Item development

Items were constructed for each of the three super-domains of participation: informal social connectedness; civic engagement; and political participation (Table 2.2). The structures of volitional community participation were to be tested, among other analyses, using one-factor congeneric modelling. The procedures involved in fitting these models require a minimum of three items, preferably four, for each measure being developed (this issue is discussed in detail in Chapter 3). The measures being

developed in this study were the domains of participation. Therefore, where possible, at least four items were constructed tapping each domain of participation.

Ideas for items were taken, where available, directly from published research. For example, eating together is a key feature of informal social connectedness, so much so that Putnam (2000, p100) mourns what he considers to be its decline. He refers with regret to an America which now prefers to “grab a bite and run rather than sit a while and chat”, (Putnam, 2000, p102). Therefore, items about eating together were included among the items developed to measure contact with household members and contact with extended family. Another important part of informal social connectedness is “schmoozing” (Putnam, 2000, pp93-97). Schmoozing refers to having an “active social life” which is “spontaneous and flexible” (Putnam, 2000, p94). Typical activities are holding dinner parties, sending greeting cards, going to bars with friends and socialising with workmates out of hours. These kinds of activities were therefore reflected in items tapping contact with friends and social contact with workmates.

Civic engagement describes the many kinds of associations that people form as they participate in organised aspects of community life (Putnam, 1995). Specifically, civic engagement comprises three types of organised voluntary association (Putnam, 1995; Putnam, 2000, p49). These are community based (such as choirs and sporting clubs), church-based, and workplace or professional associations (such as trades unions). Also included in civic engagement were attending meetings and doing voluntary work (Putnam, 2000, p94). These themes were therefore also reflected in the items developed for this super-domain.

In American, political participation, which can be broadly defined as expressing opinions and exercising rights (Putnam, 2000, p31), includes voting in elections. But as voting has declined substantially in America over recent decades (eg., Putnam, 1995) working in local groups to address issues may now be a better indicator of political participation (Rich, 1999). This may also be the case in Australia where voting is compulsory and not therefore a sound indicator of political participation or activism. Other examples of political participation include following local, national or international affairs, writing letters to newspapers, helping manage political campaigns

(as a volunteer worker), signing petitions, making donations to causes or parties, and going on demonstrations.

A particular issue discussed in these studies was that the boundaries between which kinds of activities formed part of the super-domain of civic engagement and which were part of political participation were unclear. Items tapping these two super-domains were therefore allocated as shown in Table 2.2. As these allocations could be tested empirically, it would be possible to address this conceptual issue as part of the planned data analyses.

Where specific ideas for items were not found in published research, items were generated based on related ideas and on the principles outlined above.

Refining the items

In this way, a set of 40 items was developed for pilot testing. The items were tested on two convenience samples totalling 40 respondents, with roughly equal numbers of women and men. The first sample included staff and students of a research group, some of whom were familiar with the concept of social capital. The second sample was drawn from among employees of a public service work group. Following feedback on the items, several were simplified, or the wording clarified. The response format was also amended, and the number of items included was substantially increased to reflect numerous additional suggestions. Bivariate correlation coefficients were computed for the 40 items to evaluate whether a data set based on such items would be factorable, which it needed to be (see Chapter 3). With many significant moderate to large correlations among the items, it appeared that this requirement would be met. Feedback on a revised and larger set of 67 items was sought from another convenience sample, the staff and students of a different research group, and this resulted in a few small refinements. The set of 67 refined items was then included in the survey questionnaire. A detailed assessment of the reliability and validity of this measure is presented in Chapters 3 to 6.

Response format

Participants reported the frequency with which they took part in each of the items by circling a number from 1 to 7 below each item (1= “never, or almost never”, 2= “rarely”, 3= “occasionally”, 4= “sometimes”, 5= “quite often”, 6= “very often”, and 7= “always, or almost always”). A seven-point response format was chosen for three reasons. Firstly, a seven-point scale allows a sensitive gauging of the respondents’ frequency of participation without bewildering the respondent with an excessive number of choices. In addition, if necessary, multi-point scales can be collapsed to a smaller number of categories of response later (but the reverse is not true). Secondly, a seven-point response format was chosen because it has an odd number of points. Thus respondents were not forced to choose one end of the scale or the other, but could select a middle value. Should binary or ordinal variables be required later (as they were for contact with household members for the confirmatory factor analysis), these could be computed from the original data. Thirdly, seven-point response formats were developed for a number of other measures in the study (such as the trust measures). Using a seven-point response format was therefore consistent with these other measures, and thus less confusing for respondents. Composite scores for each domain of participation were calculated using procedures described in Chapters 3 and 4. Final scores for each composite could range from 1 to 7, with higher scores indicating higher levels of participation.

Subjective perceptions of frequency of participation

No attempt was made to measure the objective frequency of participation for any of the items. That is, respondents were not asked to record how many times a day, week, month or year they took part in any form of community participation, or how much time they spent doing any of them. There were two reasons for this. Firstly, such so-called objective measures are notoriously inaccurate (Jobe et al 1993). A considerable amount of research in the area of the reliability of self-report objective measures has been conducted in the field of nutrition, in which recording the intake of various kinds and amounts of food over particular time periods is a common requirement of participants in studies. These studies have shown that, even for very simple recording tasks over short periods of time, a range of cognitive factors leads to significant error in measurement (eg., Baxter et al 2004).

Secondly, research into the relationship between mental health and social support, of which contact with others in the community forms part, has shown that the protective influence of social support comes not from how many people are in a given individual's social network, or the frequency of contact with them, but from the individual's perception that she or he has sufficient support (Cohen et al 1985). This perception is independent of the amount of support actually available or used. Thus perceptions about levels of social support, rather than the objective amount of support, predict mental health outcomes. Individuals' perceptions can also be used to predict physical health outcomes. In a review of twenty-seven community studies in health epidemiology, perceived health ("self-rated" health) was a valid and accurate predictor of mortality, including across cultures (Idler & Benyamini 1997). Thus perceptions appear to be accurate and valid predictors of health outcomes, including mental health outcomes. Participants in the present study were therefore asked to give their perceptions of how frequently they took part in each kind of activity.

Trust

Trust was measured in two ways. One was the 12-item version (short form) of the *Organizational Trust Inventory (OTI)* (Cummins & Bromiley, 1996). The inventory was developed to measure trust in organisations across three dimensions, belief that people (i) try to negotiate honestly, (ii) avoid taking advantage of others, and (iii) are reliable. It has been adapted for use in measuring trust in community samples via self-report survey (Berry & Rickwood, 2000). The items, half of which are reverse-scored, include statements such as "most people you meet keep their word" and "most people you meet succeed by stepping on others" (see Table 2.3).

Each item is scored on a seven-point response format developed for this study. In response to feedback received during the development of the measure, the format was refined to make it more "user-friendly" for younger adults. It ranged from "definitely agree" to "definitely disagree". Final average scores for the sub-scales and for the full scale could range between 1 and 7, with higher scores indicating higher levels of trust. With Cronbach alpha reliability coefficients of .77 for the negotiate honestly sub-scale, .85 for the avoiding taking advantage sub-scale, and .80 for the people are reliable sub-scale, together with an alpha value of .83 for the full scale, the *OTI* as adapted and used in this study showed internal consistency.

Table 2.3. The Organisational Trust Inventory, as adapted for use with general populations of adults in self-report surveys.

Sub-scale	Item
People negotiate honestly	Most people you meet
	1. ... tell the truth when they're sorting out a problem
	2. ... make agreements honestly
	3. ... don't mislead others
People avoid taking advantage of others	Most people you meet
	4. ... decide fairly what they expect from each other
	5. ... succeed by stepping on other people*
	6. ... take advantage of others' problems*
People are reliable	Most people you meet
	7. ... try to get the upper hand*
	8. ... take advantage of those who are vulnerable*
	9. ... keep their word
	10. ... do what they say they'll do
	11. ... try to get out of their commitments*
	12. ... are reliable

* items are reverse-scored

Trust was also measured using the one-item measure of trust from the *World Values Survey* (Inglehart et al., 1997). This measure was included because it is used extensively in social capital research. The item is “generally speaking, would you say that most people can be trusted, or that you can’t be too careful in dealing with people?” The item was scored 1 = “most people can be trusted” (the high trust response), 0 = “you can’t be too careful” (the low trust response). Thus, the higher score indicated higher levels of trust. As this measure contained only one item, it was not possible to assess its internal consistency, and a Cronbach alpha reliability coefficient cannot be computed.

Psychological distress

General psychological distress was measured using the ten-item *K10* (Kessler et al 2002). This screening scale has been extensively validated on Australian respondents (Andrews & Slade 2001, Furukawa et al 2003, Kessler et al 2002, Kessler et al 2003)

and measures symptoms of non-specific psychological distress. Each item was scored on a five-point scale from 1= “none of the time” to 5= “all of the time”. Final summed scores have a minimum of 10 and a maximum of 50 with higher scores indicating higher levels of distress. Scores in the present sample ranged from 10 to 44. The scale exhibited a high degree of internal consistency (Cronbach alpha=.88).

Socio-demographic data

With some 241 items, this was a lengthy questionnaire. It was therefore not possible to gather extensive socio-economic data, and certain efficiencies were applied. To avoid asking a large number of questions about personal and household income, and about financial strain, respondents were asked whether they had a government benefit “health care card”. A health care card permits the holder free medical consultations with participating general practitioners, greatly reduced fees for prescription medicines, and a range of financial discounts in the local community (such as discounts on bus fares and movie tickets). Having a health care card was a proxy for measuring income and financial strain, because health care cards are only issued to people in receipt of government income support, and they are strictly means tested. Thus, possession of a health care card is an indicator of low economic status. The item was scored 1=yes and 0=no, such that the higher score indicated higher levels of financial hardship.

As a guide to employment status, and an adjunct to understanding economic status, respondents were asked to record how many hours of paid work and/or paid study they usually completed each week. Responses were 0= “I don’t usually do any *paid* work or study”, 1= “1 to 5 hours a week”, 2= “6 to 15 hours a week”, 3= “16 to 30 hours a week”, 4= “31 to 45 hours a week”, and 5= “more than 45 hours a week”. Data were later recoded such that 0 to 5 hours of paid work or paid study a week was considered “not in paid work”, 6 to 30 hours was considered “part-time work”, and 31 hours or more was considered “full-time work”.

It was also not possible in such a long questionnaire to ask detailed questions about levels of education and number and type of qualifications obtained. Instead, years of full-time education or the equivalent since turning 16 years old were recorded. Those who reported having completed two, or fewer, years of full-time education since

turning 16 were recorded as having completed “high school or less”. Those who reported having completed between two and six years of full-time education since turning 16 were recorded as having completed a “certificate, diploma or degree”, or equivalent, while those who had completed seven or more years of full-time education since turning 16 were recorded as having completed a “professional, or higher degree” or equivalent.

Participants were also asked to report whether or not they had dependents (1=yes, or 0=no), with dependents defined as “any people that depend on you for supervision or care (eg., adults with an illness, children) and live with you most days every week”. Respondents who answered “yes” were then asked to record how many dependents they had in each of four age categories, aged 5 years or under, aged 6 to 12 years, aged 13 to 18 years, and aged 19 years or over. Finally, respondents also stated their sex (female or male), their year of birth, whether they identified as an Indigenous Australian (yes or no), and whether they were born in Australia (yes or no).

SOFTWARE, DATA SCREENING AND MISSING DATA

All data analyses for this study were conducted using SPSS 12.0.1 for Windows (Statistical Package for Social Sciences, SPSS Inc.) and AMOS 5 (James L. Arbuckle, 1994-2003, SmallWaters Corp.). All figures were also produced using SPSS or AMOS, except for the figures in Chapter 5, which were produced using Microsoft Excel (Microsoft Corporation, 2004).

Data screening

Except for approximately 100 cases that I entered, a data entry operator entered all data. Accuracy of data entry was checked in two ways. I checked the data entry for a random selection of approximately 50 questionnaires. I also examined frequencies for all variables to detect out-of-range values and missing data. All out-of-range values and missing data were individually checked against the questionnaires. There were only six data entry errors, but there was a substantial amount of missing data (defined as more than 5% for any measure). Missing data present challenges for data analysis. In particular, some of the techniques used in this thesis, such as one-factor congeneric

modelling and confirmatory factor analysis, required complete data. It was therefore necessary to address the missing data.

Missing data

Inspection of the frequencies for the 977 returned questionnaires revealed that eight questionnaires contained entirely or almost entirely missing data, and these cases were deleted. The remaining missing data were mainly for three measures: social contact with workmates (four items); contact with household members (four items); and numbers of dependents in particular age-groups (four categories). Almost half of the respondents (N=428) had not answered the items on social contact with workmates. For certain respondents, it could be assumed that the reason they did not complete these items was because they were not in paid work, did not therefore have workmates with whom they could socialise, and likely skipped those items because they did not apply. Respondents who were assumed to be in this situation were those who reported that they undertook 0 hours of paid work each week, or who were aged over 60 years, and could be assumed to be in retirement, or both, and who had otherwise returned complete data. These respondents were attributed scores of 1 (no, or almost no, contact with workmates) for each of the four social contact with workmates items. Following this, 3% (N=31) respondents' data were still missing.

About 9% (N=83) of data on contact with household members were missing. Those respondents who indicated on a related item that they usually lived alone were assumed to have no contact with household members. They were therefore attributed scores of 1 (no, or almost no contact with household members) for each of the four relevant items, providing they otherwise returned complete data. Following this, 3% (N=35) respondents' data were still missing. Around 11% (N=107) of data on numbers of dependents within particular age-group categories were also missing. Respondents who answered "no" to the item asking them if they had any dependents (yes or no), and respondents aged over 60 years (24 cases), were assumed to have no dependents. They were therefore attributed a score of 0 for each of the age-group categories. Following this, 2% (N=20) of data remained missing. There were no differences in levels of participation between those who had missing data and comparable respondents who did not, and details are not reported here.

Imputing missing values

It was possible, as described above, to replace a substantial proportion of the missing data by inferring why the data were missing and, therefore, what the respondents would have been likely to have reported. Following this, however, a small amount of all data was still missing, though not more than 3% for any measure. Given that, for some of the analyses required for this thesis, the data set could contain no missing data, it was necessary to address this remaining amount. Two options were possible, to delete cases, or to impute values to replace missing values.

As the amount of data missing was very small, spread evenly among participants, and not concentrated in particular measures, I decided to impute missing values. This is most accurately done using full information maximum likelihood estimation (Arbuckle, in Marcoulides & Schumacker, 1996), which is a missing data replacement method that uses regression-like algorithms based on the full data set. This method assumes no bias, but is nevertheless robust to bias in the missing data. The procedure was conducted in SPSS, using commands from the “missing values analysis” option, on a copy of the original data set. Among its outputs, it produces mean scores and standard deviations for all variables before and after the replacement procedure. If these scores are similar, the imputed values can be accepted and imported into the main data set. For these data, mean scores and standard deviations for all variables before and after the procedure were identical or near identical in all cases, and the imputed values were therefore accepted. The data set thus contained complete data for all respondents.

Case deletions and score rounding

Two further procedures were necessary, checking the data for univariate and multivariate outliers, and rounding scores. Imputed scores for categorical variables, such as having dependents (yes/no), were rounded to the nearest whole number. The data set was then examined for outliers. There were no univariate outliers, but six cases were deleted because they were extreme multivariate outliers (details of this analysis are relevant to, and reported in Chapter 3). Together with the eight cases that had been deleted because they had too much missing data, in all, fourteen cases were deleted. This left a total sample of 963 cases with complete data.

The final data set

With 963 usable responses, the size of the final data set was considerably larger than the minimum requirement of around 600 cases. The response rate, and the completeness of the data returned, were also good, given that the questionnaire was very long. Informal feedback from participants indicated that they did find the length of the questionnaire onerous, but that they found the questions interesting and thought the study worthwhile.

It was not possible to determine the extent to which local media support influenced participants' perceptions of the value of taking part in the study or the completeness of the data they returned. However, much of the contact participants made with me resulted from them having read or heard of the study in the media. Given the difficulty of generating high response rates, and of obtaining complete data from respondents involving the local media in encouraging participation in epidemiological studies might be an interesting factor to explore in future studies of this kind, particularly among sectors of the community that are hard to reach.

CHAPTER 3: DIFFERENT WAYS THAT PEOPLE PARTICIPATE IN THEIR COMMUNITIES

CHAPTER SUMMARY

This chapter begins with an overview of, and rationale for, the analyses to be presented in chapters 3 to 5. The chapter then describes a set of exploratory factor analyses that were conducted to make a preliminary evaluation of the hypothesis that there were sixteen distinct kinds of volitional community participation. This evaluation led to a preliminary conclusion that there were in fact only fourteen distinct kinds of participation. This preliminary fourteen-factor solution was used to generate hypothetical structural models for each domain of participation. One-factor congeneric analyses were then conducted to test the validity of these hypothetical models, and a final fourteen-factor model is presented. Factor weightings generated from the one-factor congeneric modelling were used to compute composite scores for each domain of participation, and this procedure is described. The chapter concludes with the presentation of descriptive statistics for each domain of participation for women, men, three generations, and the whole sample. Commentary is made on which kinds of participation were the most common, which were less common, and which were rare.

GENERAL INTRODUCTION TO EXAMINING THE STRUCTURES OF PARTICIPATION IN CHAPTERS 3 TO 5

The purpose of the next three chapters is to describe the elements and structures of volitional community participation. In Chapter 1 it was proposed that the many different things people do when they participate voluntarily in their community could be grouped to form a series of categories, or “domains”, of participation (Hypothesis 1). That is, it is proposed that volitional community participation is not a unitary

phenomenon but is made up of a series of separate elements, each containing a great variety of specific activities. These domains include, for example, being in touch with friends, taking an interest in current affairs and getting involved in organised activities in the community. Each of these is a discrete way in which it is possible to participate voluntarily in the life of the community.

Given there are a number and variety of forms of participation, it is unlikely that all people do all of them all of the time. Instead, they could be expected to select among forms of participation. Some people might take part in some activities, others in a different set of activities. Some might spend a lot of time doing a few activities, some smaller amounts of time spread across many activities, while still others might not participate much at all. Community participation may therefore mean different things to different people and may result in or reflect different lifestyles and, indeed, different mental health experiences.

Further hypotheses

Such variety in the nature and amount of people's community participation leads to a further hypothesis, which is that it is likely that people have certain patterns of participating. Thus, if they engage in one kind of participation, there may be certain other kinds of similar types of participation in which they are also likely to engage. This suggests that individual types of participation might be able to be grouped into categories together with other similar types of participation. This would contribute to the value of this study because it would simplify the concept of community participation and thus aid in its understanding. Therefore it was further proposed in Chapter 1 that individual domains of participation could be grouped to form three broad types, or "super-domains" of community participation (Hypothesis 3). These were informal social connectedness, civic engagement and political participation. Conceptualised like this, community participation can be understood as comprising constituent elements, or "domains", and higher order categories, or "super-domains", that show which of the elements belong together.

From the point of view of individuals' patterns of participation, this hypothesis leads to two further hypotheses. These are, firstly, that those engaging in one type of

participation would be more likely than non-participants to also engage in other types of participation *within the same super-domain*. For example, informal social connectedness includes elements such as contact with friends, contact with extended family and contact with neighbours. It might be expected that those who maintain contact with, say, friends would also be more likely to have contact with extended family or neighbours, or both, than those who do not maintain contact with friends.

Secondly, the super-domains may themselves be related, such that those engaging in some form of participation *within* one super-domain are more likely than non-participants to also engage in some form of participation from *another* super-domain. That is, those who have high levels of, say, informal social connectedness may be more inclined than their less connected peers also to engage in the civic or political life of their communities.

These ways of grouping different elements of community participation can be further understood by taking a different perspective. Instead of looking at which kinds of participation might be associated, it is possible to investigate whether there is an underlying theme that applies to all forms of participation: specifically, all forms of participation may lie on a continuum from the most private to the most public. It might be expected that such forms of participation as spending time with immediate household members would be a private kind of participation, while engaging openly in the political life of the community would be a public kind of participation. Other types of participation, such as religious observance or socializing with workmates, might lie somewhere in between. Specifically, it was proposed in Chapter 1 that the domains of participation could be ordered to reveal an underlying public-private “dimension” of participation (Hypothesis 5). An analysis such as this might help further explain people’s patterns of participation. For example, maybe some people only engage in private forms of participation, others in public life, while still others participate in activities across the spectrum. Patterns of community participation viewed from this perspective may also help shed light on any relationship between participation and mental health.

Types of people

In sum, it has been proposed that people participate in their communities in different ways, both in terms of types of participation and in terms of whether they engage in private or public affairs, or in both. With such diversity in the types and nature of participation, a final hypothesis follows. That is that there may be identifiably different types of people within communities that differ from each other by virtue of their patterns of participation. For example, there may be a type of person within the community that participates a great deal, possibly in a wide range of activities. Others might participate frequently, but only in certain types of activities. Still others may not participate much in any form of activity. It was therefore proposed that respondents could be grouped to reveal a typology of people in the community by reference to their patterns of participation (Hypothesis 6). Possible solutions to these puzzles are presented in this and the next two chapters. But before addressing them specifically, a brief overview of the statistical methods necessary to evaluate these hypotheses is presented.

OVERVIEW OF STATISTICAL METHODS FOR CHAPTERS 3 TO 5

A variety of statistical methods have been employed in this task for two reasons. Firstly, there is a methodological imperative to select appropriate statistical methods to suit different research questions and different research strategies. Secondly, combining more than one statistical approach when attempting to analyse complex phenomena has the benefit of providing a variety of perspectives on that complexity and thus helps to better understand it.

This benefit may best be made apparent by briefly mentioning previous studies whose aims, as in this research, have been to describe broad constructs clearly and accurately. For example, in a Chinese study, exploratory factor analyses were used to generate and select a set of summary variables with which to differentiate between different regions of the municipality of Shanghai (Zhu 1996). A cluster analysis was then conducted to characterise five distinct types of “social space” in Shanghai, such as “high density commercial residential” and “industrial mixed residential”. In a Japanese study of 3,642 members of the general public, exploratory factor analysis in combination with cluster analysis was used to identify six types of sleep patterns among normal adults

(Fukuda et al 1999). And in a study of 110 mainly homeless African-American women with crack-cocaine misuse problems, exploratory factor analysis was again combined with cluster analysis to generate a typology of five distinct kinds of user (Cohen 1999).

Some of the statistical methods that have been employed in studies such as these and in this thesis are not commonly used in psychiatric epidemiology. An explanation of the statistical methods, why they were used and, where appropriate, how they have been used in relevant previous research is therefore included in each chapter. In overview, in addition to descriptive statistics, the main statistical methods that have been employed in chapters 3 to 5 are exploratory factor analysis, confirmatory factor analysis, multi-dimensional scaling, cluster analysis, and analysis of variance.

AIMS OF THIS CHAPTER

The first step in describing volitional community participation was to identify the basic elements of participation that would become the building blocks for further analyses. Thus the overall aim of this chapter is to explore the potential to summarise accurately and meaningfully examples of individual ways in which people participate in their communities. The present chapter therefore focuses on evaluating the data collected for this study with respect to the basic elements, or “domains”, of community participation, as described in Hypothesis 1. More specifically, the primary goal of this chapter is to evaluate Hypothesis 1 by attempting statistically to group items tapping community participation. There are two main methodological approaches to achieving such an aim, both forms of factor analysis. The first is exploratory factor analysis, which is appropriate for theory development, and the second is one-factor congeneric modelling, a sub-set of confirmatory factor analysis, and more suited to theory testing. Both were appropriate for use in this study and so both were conducted.

A further aim of this chapter relates to the ways in which the outputs of factor analyses may be utilised. Factor analyses can be used to generate composite scores on the groupings of items, or “factors”, they produce. These composite scores can be used in later analyses, much like continuous variables. From composite scores, it is also possible to generate descriptive statistics for each of the factors. Descriptive statistics,

such as means and standard deviations, were of interest in this study because they showed the distributions of different types of community participation. Creating composite scores for use in later analyses and to produce descriptive statistics was therefore also a goal of the analyses in this chapter.

Both types of factor analysis may also be used in the process of scale development. However, scale development was not an aim of this study, and so is not an aim of this chapter, and issues to do with scale development were not directly addressed. Rather, the aim of the chapter is to shed light on the elements of community participation and to describe the distributions within the community of different kinds of participation.

We begin with an exploratory factor analysis. This is followed by the development of a complete set of one-factor congeneric models, one for each domain of community participation suggested by the exploratory factor analysis. This was a preliminary step in conducting a confirmatory factor analysis reported in Chapter 4. The present chapter concludes with descriptive statistics with respect to the separate domains of community participation identified by these procedures.

INTRODUCING EXPLORATORY FACTOR ANALYSIS

Exploratory factor analysis is a set of statistical techniques used for data simplification (Diekhoff 1992: p.333, Tabachnik & Fidell 2001: p.582). Used appropriately – that is, when a study has been properly theoretically and methodologically designed to be suitable for the use of exploratory factor analysis – it identifies a minimum number of factors underlying a set of variables when the underlying structure is not already known. Exploratory factor analysis is based on identifying patterns of bivariate associations among a set of observed variables thought to be indicative of an underlying construct that cannot be directly measured. Its use is appropriate in theory development (rather than in theory testing), particularly when there is reason to investigate whether or not a construct, such as community participation, is a unitary phenomenon. As has been said, exploratory factor analysis can also be used to generate estimates of factor-weighted scores for respondents on each factor that can be used in subsequent analyses in the same way as continuous variables. The aims of the exploratory factor analysis in this chapter are therefore to simplify the raw data on

community participation with a view to making a preliminary evaluation of the hypothesised model of domains of participation, and to identify which items might be grouped to generate composite scores for use in later analyses.

Conditions for conducting exploratory factor analyses

Beyond assuming that a study has been properly conceptually and methodologically designed to be suitable for exploratory factor analysis, certain additional conditions must be met. These are addressed in turn below. A decision about the suitability of the data for exploratory factor analysis is based on a holistic evaluation of the degree to which the data meet all the conditions taken together.

The first condition is that the variables must be intuitively related. As described in Chapter 2, data on perceived amount of community participation were collected for 67 items tapping community participation. The items were measured on a Likert-type scale ranging from 1 to 7 on which respondents indicated how often they participated with respect to each item. As the 67 items to be analysed all tapped amounts of activity with respect to different aspects of community participation, this condition is met.

Another condition for conducting an exploratory factor analysis is that the data set must be factorable (Tabachnik & Fidell 2001: p.589). This means that the variables must be inter-correlated, with a substantial proportion of bivariate correlations greater than .3 (Diekhoff 1992: p.351). This is assessed by visual inspection of the correlation matrix.

Correlation coefficients were therefore computed. For these data, which violate the assumption of normality of distribution, it was appropriate to calculate Spearman's r correlation coefficients, as this is a non-parametric statistic. However, the factor analyses and multivariate analyses that follow later in this chapter, and multivariate analyses that follow later in the thesis, cannot be conducted using Spearman's r , and rely instead on Pearson's product moment correlation coefficients (Pearson's r). For the sake of consistency with later analyses, Pearson's r correlation coefficients were therefore also computed to evaluate bivariate associations between variables in the

dataset. The matrices are not presented here because of their very large size and because sampling statistics (reported below) indicated adequate sampling. Inspection of both bivariate intercorrelation matrices revealed that the intercorrelations between variables in this sample were very similar for both the Spearman's and Pearson's approaches. Further, the majority of these correlations were greater than .3, many much larger, indicating factorability.

An adequate sample is also essential. From the perspective of sample size, about ten cases per variable are sufficient, fewer when the variables are highly intercorrelated (Diekhoff 1992: p.356), as they are in this study. This would require a sample size of at most 670, and the present sample size of $N=963$ is adequate. Indeed, sample sizes of around $N=1000$, such as in this study, are considered "excellent" (Comrey & Lee 1992) in (Tabachnik & Fidell 2001: p.588). Further, two relevant sampling statistics indicated very adequate sampling. These were Bartlett's test of sphericity ($p<.0001$), a measure of the magnitude of intercorrelations among variables, and the more important Kaiser-Meyer-Olkin statistic ($KMO=.89$), a measure of the degree to which the correlations between pairs of variables can be explained by the other variables in the data set.

In sum, all variables were strongly intuitively related, the data set was clearly factorable, the sample size was "excellent", and the Bartlett's and KMO sampling statistics indicated very adequate sampling. I therefore judged this data set to be suitable for exploratory factor analysis.

Preparing the data for the analysis

Having met the basic conditions for conducting an exploratory factor analysis, it was necessary to ensure the data met additional specific requirements. Generally, exploratory factor analysis is a robust procedure. For the purpose of describing the underlying relationships among a set of observed variables, assumptions about the normality of distributions of variables can be relaxed, particularly with large samples (Tabachnik & Fidell 2001: pp.588 and 614). Therefore, though as expected most variable distributions were skewed and many were bimodal, transformations were not performed on the raw data for this analysis.

Factor analysis is however very sensitive to outliers. In exploratory factor analysis, variables as well as cases can be outliers. Outlying variables are those that do not correlate substantially and significantly with at least some of the other variables in the data set. Inspection of the bivariate intercorrelations matrix indicated that there were no outlying variables in this data set. There were also no univariate outlying cases. However, Mahalanobis' Distance statistics and multiple regression residuals identified a number of multivariate outlying cases. These statistics, which indicate the extent to which particular cases are multivariate outliers, were derived from a regression of the dependent variable, psychological distress, on all 67 participation variables simultaneously. The six most extreme cases were deleted from the data set and analyses were performed on the remaining 963 cases.

Because creating factor scores was an aim of this analysis, the raw data were first converted to z-scores. This avoids variables with larger standard deviations contributing unevenly to factor scores and introducing additional error into later analyses (Tabachnik & Fidell 2001: p.626).

Selecting an appropriate approach to generating a factor solution

Having met the conditions for conducting an exploratory factor analysis, and having prepared the data for the analysis, it was necessary to decide which of many possible analyses should be conducted. This decision was necessary because more than one factor solution may fit the data and different approaches to extracting and rotating factors are available. If the factor structure generated reflects "reality" in the community and is not an artifact of one particular sample or of one particular method of analysis, the factor solution will be very similar across different methods of extracting and rotating factors (Diekhoff 1992: p.357). Such similarity indicates a "stable" solution (Tabachnik & Fidell 2001: p.609), that is, a replicable solution, the results of which may be generalised with some confidence to the general population. Four combinations of approaches were compared: principal axis factoring and maximum likelihood factoring each in combination with varimax and oblimin rotations, with Kaiser normalization (Kaiser 1958).

Principal axis factoring is the most commonly used method for extracting factors (Tabachnik & Fidell 2001: p.609). Maximum likelihood factoring is a method that maximises canonical correlations between factors and variables and is suited to analyses in which factors will be correlated (Tabachnik & Fidell 2001: p.613), such as in this study. It is also robust to non-normality in the distribution of variables, also relevant to this study. The varimax rotation delivers an orthogonal solution. For this reason, it is the most commonly used rotation. It is also commonly used because it maximises the variance of squared factor loadings for each factor (Diekhoff 1992: p.348). This reduces the number of items with moderately sized loadings and thus simplifies interpretation.

Varimax rotation is best suited to data sets in which factors are not correlated, which is not the case here. However, it is recommended in two other situations (Tabachnik & Fidell 2001: p.622-623), both of which apply in this study: when factor scores are to be used in further analyses, because orthogonal factors avoid complications such as multicollinearity and singularity (Diekhoff 1992: p.334); and when the factor structure is to be compared across sub-groups of the sample population. For situations in which the factors are correlated, as for these data, an oblique rotation, such as the oblimin rotation, is usually appropriate. Oblique rotations maximise the correlations both among items loading on a factor and between items and the factor.

In this study, the maximum likelihood approach to factor extraction was likely to be preferable, though it is less commonly used, because it is designed to suit correlated factors and non-normally distributed data. However, it was less clear which approach to rotation could be expected to be preferable. An orthogonal solution may be required for further planned analyses, such as multiple regression analyses and exploring differences in patterns of participation among sub-groups of the sample population. However a correlated solution was theoretically more appropriate and was also required to address the hypothesis that the separate domains of community participation were associated such that they could be grouped to reveal higher order “super-domains” of participation (Hypothesis3). Two factor solutions were therefore selected, one using orthogonal rotation and one correlated, and compared with each other.

Criteria for comparing the adequacy of different factor solutions

Most important criteria for evaluating factor solutions

Various criteria were used to ascertain the most acceptable solution. The three most important criteria were meaningfulness and interpretability (generating factors that made sense and were scientifically useful), parsimony (generating the smallest number of stable factors that would fit the raw data), and the proportion of non-redundant residuals. Parsimony and non-redundant residuals are discussed in more detail below.

Meeting the criterion of parsimony involves determining the number of factors to extract and this is one of the most difficult aspects of exploratory factor analysis. Various criteria may guide this decision but, ultimately, it is a matter of researcher judgment based on evaluating the acceptability of solutions with different numbers of factors. The most important guiding criterion is an assessment of the adequacy of each factor. The results of this assessment indicate whether each factor should be retained in a final solution and thus impacts on the number of factors ultimately extracted. Assessing the adequacy of factors, particularly the adequacy of those that may be unstable, is discussed in more detail in the next section. A second guiding criterion for how many factors to extract is to select factors with eigenvalues greater than one. Eigenvalues are discussed in more detail in the section on secondary evaluation criteria. Finally, Cattell's scree test may also be used as an indicator of how many factors to extract (Cattell 1966). This test is notoriously subjective but tends to be more reliable under optimal conditions, such as for these data, in which there is a large sample with high communalities and several variables with high loadings on the factors.

We turn now to the criterion of non-redundant residuals. One step in the mathematics of factor analysis involves reproducing the original correlation matrix obtained between observed variables (Tabachnik & Fidell 2001: pp.584 and 597). The aim is to do this as accurately as possible. Residuals are the difference between the original correlation between any two variables and the correlation between the same two variables as reproduced by the factor analysis. Residuals of .05 or greater are said to be "non-redundant", that is, inadequate reproductions of the original correlation. The number of non-redundant residuals as a proportion of all reproduced correlations is

therefore an important indication of the statistical adequacy of the solution: a small proportion of non-redundant residuals is sought because it indicates a satisfactory solution.

Factor adequacy

It is essential to evaluate the adequacy of factors, especially with respect to meeting the criterion of parsimony. Most importantly, theoretical considerations (such as whether the factor is scientifically useful) are the first step in deciding whether a factor is adequate and should ultimately determine the retention or rejection of any factor. In addition, generally speaking, all statistically stable factors should be included in a final solution, and only stable factors should be included. Specific criteria for assessing factor stability follow.

First, one indication of factor stability is that the same factors, sometimes with the same items loading on them, appear no matter which approaches to extraction and rotation are used. Factors and item structures that are common to several solutions are likely to be stable and can usually be confidently included in a final solution. A second indication of factor stability is the number of items loading on a factor. Usually, a minimum of three items loading on a factor would be considered acceptable. Factors with only one high-loading item are unreliable and would rarely qualify for inclusion in a final solution. Sometimes, factors with two variables may be reliable if the variables are highly correlated with each other and not with other variables. In this case, care needs to be taken to ensure that a high correlation between the two variables is not a result, for example, of repeating in a questionnaire two items that are essentially the same. Even when this appears not to be the case, and the correlation is genuine, such factors should be treated with caution (Tabachnik & Fidell 2001: pp.589-590), including when there are theoretical reasons to retain them.

Third, factor stability is indicated by the internal consistency (statistical validity) of the factor, assessed by inspecting the squared multiple correlations of the factor scores (Tabachnik & Fidell 2001: p.625). Large squared multiple correlations ($r^2 > .70$) indicate stable factors. Fourth, the magnitude of factor loadings is relevant to assessing factor stability. Factors that have items loading strongly on them are more likely to be stable than those with low-loading items (a cut-off of $> .45$ is acceptable). Finally, factors

that appear only with one approach to extraction or rotation may be an artifact of a particular methodology and may thus not be stable.

Secondary criteria for evaluating factor solutions

In addition to an assessment of parsimony (which includes an assessment of factor adequacy), meaningfulness and scientific value, and non-redundant residuals, four secondary criteria guide the evaluation of factor solutions. These include eigenvalues, total variance in the original variables explained by the selected factors taken together, the number and magnitude of cross-loadings, and the magnitude of factor loadings on all factors, particularly on potentially unstable factors.

Eigenvalues are an index of the strength of the relationship between any one factor and all the original variables (Diekhoff 1992: p337-338). Eigenvalues greater than one indicate factors that explain at least as much variance in the original variables as any one of those variables does alone. Given that data reduction is an aim of factor analysis, factors that do not meet the eigenvalue-greater-than-one criterion would not normally be included in a final solution. But the number of factors to extract is ultimately a matter for judgement based on a range of criteria, among which eigenvalues are not the most important.

Total variance explained by the factors taken together is usually considered acceptable if it lies between 50% and 75% (Diekhoff 1992: p.338). It should be noted that total variance explained cannot be calculated for correlated solutions because sums of squared loadings may not be added. As explaining variance is not a goal of exploratory factor analysis, this issue is not of great importance. However, it helps describe the results of the analyses, and variance explained is reported where appropriate.

Cross-loadings refer to variables that load substantially on, and are thus significantly associated with, more than one factor. In practice, cross-loadings of items of less than .32 on a factor, which share less than 10% of variance with the factor, are considered negligible and ignored. Those falling between .32 and .45 (between 10% and 20% of shared variance) are a matter for judgment (Comrey & Lee 1992) in (Tabachnik & Fidell 2001: p.625). When there are no substantial cross-loadings, the solution is said

to be “simple” (Thurstone 1947) in (Tabachnik & Fidell 2001: p. 623). Often factor analysis is used as a step towards scale development (Tabachnik & Fidell 2001: p.582). In such a case, when items are being selected to measure discrete concepts, simple structure is required. Items that load strongly on one factor and not on other factors are selected for scales because they discriminate better between the factors than items that cross-load. However, in this study, scale development was not a goal and there was no need to address cross-loadings. Indeed, cross-loadings of items or inter-correlations among factors were expected in an analysis exploring activities that are all, by definition, aspects of community participation. Nevertheless, for the sake of completeness, cross-loadings are reported.

Finally, the magnitude of loadings of individual items on factors is reported. This is not only because they help indicate factor stability, but also because they help in interpreting factors (Tabachnik & Fidell 2001: p.618). That is, stronger loadings indicate variables that share more common variance with a factor than items with weaker loadings and are thus more representative of the factor than those with weaker loadings. Very large factor loadings (greater than .80) may indicate “marker variables”, or variables that define the factor.

AN OVERVIEW OF THE FACTOR SOLUTIONS OBTAINED

To recapitulate, four approaches to extracting and rotating factors were used: principal axis factoring and maximum likelihood estimation, each with varimax and oblimin rotations. The hypothetical structure of volitional community participation presented in Chapter 1 (Figure 1.1) comprised sixteen domains of participation. This would suggest a sixteen-factor exploratory factor solution. A preliminary statistical consideration of how many factors to extract from this data set was conducted via principal components analysis. This revealed that it would be appropriate to extract between twelve and fifteen factors from this data set, and so this was done. Each of the four approaches to extracting and rotating factors described above were therefore used to extract twelve, thirteen, fourteen and fifteen factors in turn. Thus, in total, sixteen separate analyses were performed, four for each number of factors. Table 3.1 summarises the evaluation criteria for these four approaches when the different numbers of factors were extracted.

In total, seventeen different factors emerged from all the analyses taken together. Of these, eleven factors were common to all sixteen solutions, while a further six factors appeared in some solutions and not in others. The factor names suggested for each solution, and the solutions on which each factor appeared, are listed in Table 3.2. With eleven factors common to all solutions, and most of the other six factors common to several solutions, all sixteen solutions generated very similar factor structures. This was an indication that the factor structure was stable. To analyse these results in more detail, the most important criteria for assessing the adequacy of solutions are discussed first, followed by the secondary criteria.

Tables 3.1 and 3.2 appear on the following pages.

Table 3.1. Summary table comparing two types of factoring and two types of rotation for an exploratory factor analysis of 67 items tapping community participation: 12 and 13 factors extracted.

Rotation	Principal Axis Factoring		Maximum Likelihood Factoring	
	Varimax	Oblimin	Varimax	Oblimin
12 FACTORS				
Factor adequacy				
Factors with < 3 variables	1 (0)	1 (0)	0 (2)	0 (2)
Proportion loadings >.50	89.55%	88.06%	82.09%	82.09%
Cross-loadings >.45 (>.32)	0	0	0	0
Squared multiple correlations	.65-.96	N/a	.68-.96	N/a
Meaningfulness/interpretability	Very good	Very good	Very good	Very good
Non-redundant residuals	90 (4%)	90 (4%)	93 (4%)	93 (4%)
Variance explained	63.03%	N/a	63.03%	N/a
Eigenvalue range	1.43-11.33	1.43-11.33	1.43-11.33	1.43-11.33
13 FACTORS				
Factor adequacy				
Factors with < 3 variables	2	1	2	1
Proportion loadings >.50	88.06%	83.58%	82.09%	80.60%
Cross-loadings >.45 (>.32)	1 (1)	0 (2)	1 (4)	0 (2)
Squared multiple correlations	.58-.96	N/a	.68-.96	N/a

Meaningfulness/interpretability	Moderate	Moderate	Very good-Excellent	Very good-Excellent
Non-redundant residuals	64 (2%)	64 (2%)	80 (3%)	80 (3%)
Variance explained	64.85%	N/a	64.85%	N/a
Eigenvalue range	1.22-11.33	1.22-11.33	1.22-11.33	1.22-11.33

Table 3.1 (continued). Summary table comparing two types of factoring and two types of rotation for an exploratory factor analysis of 67 items tapping community participation: 14 and 15 factors extracted.

Rotation	Principal Axis Factoring			Maximum Likelihood Factoring		
	Varimax	Oblimin	Oblimin	Varimax	Oblimin	Oblimin
14 FACTORS						
Factor adequacy						
Factors with < 3 variables	3	1	3	2		
Proportion loadings > .50	86.57%	82.09%	82.09%	88.06%		
Cross-loadings > .45 (> .32)	2 (4)	0 (2)	1 (4)	1 (1)		
Squared multiple correlations	.60-.96	N/a	.69-.96	N/a		
Meaningfulness/interpretability	Moderate	Moderate-good	Excellent	Excellent		
Non-redundant residuals	52 (2%)	52 (2%)	73 (3%)	73 (3%)		
Variance explained	66.49%	N/a	66.49%	N/a		
Eigenvalue range	1.10-11.33	1.10-11.33	1.10-11.33	1.10-11.33		
15 FACTORS						
Factor adequacy						
Factors with < 3 variables	4	1	4	2		
Proportion loadings > .50	85.07%	86.57%	85.07%	86.57%		
Cross-loadings > .45 (> .32)	2 (6)	1 (2)	1 (7)	1 (3)		
Squared multiple correlations	.59-.96	N/a	.59-.96	N/a		

Meaningfulness/interpretability	Moderate	Moderate	Good	Good
Non-redundant residuals	33 (1%)	33 (1%)	44 (1%)	44 (1%)
Variance explained	68.08%	N/a	68.08%	N/a
Eigenvalue range	1.06-11.33	1.06-11.33	1.06-11.33	1.06-11.33

Table 3.2: Factors appearing in sixteen exploratory factor analyses of 67 items tapping community participation.

Factor name	12 factor solutions			13 factor solutions			14 factor solutions			15 factor solutions		
	PAF ¹⁴		ML ¹⁵	PAF		ML	PAF		ML	PAF		ML
	V _x ₁₆	Ob ₁₇	V _x	Ob	V _x	Ob	V _x	Ob	V _x	Ob	V _x	Ob
Contact with household members	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Contact with extended family	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Contact with friends	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Contact with neighbours	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Social contact with workmates	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Education and learning	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Religious observance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Organised community activities	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Volunteering	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Active interest in current affairs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Community activism	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Giving money to charity	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Leadership in the voluntary sector	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reading the local press					✓							✓
Interest in local affairs				✓								✓
Expressing opinions publicly							✓					✓
Political action						✓						✓

¹⁴ PAF = "Principal Axis Factoring".

¹⁵ ML = "Maximum Likelihood" factoring.

¹⁶ V_x = with Varimax (orthogonal) rotation.

¹⁷ Ob = with oblimin (correlated) rotation.

Each solution produced meaningful and, in the large majority of cases, scientifically useful factors. With respect to parsimony, the maximum number of factors extracted was fifteen, one less than in the hypothesised model (Figure 1.1). This suggests adequate parsimony. In addition, each solution produced fifteen factors with eigenvalues greater than one, also one less than in the hypothesised model. Further, inspection of the scree plot produced with each solution indicated that in each case between twelve and fifteen factors could be extracted, also at most one less than in the hypothesised model. (A scree plot is shown in Figure 3.1 as an example.) Factor adequacy criteria indicated that the number of factors extracted was appropriate. With between 80.60% and 89.55% of factor loadings greater than .50, the large majority of factors having three or more variables loading on them, and with squared multiple correlations within the range of .58 to .96, the great majority of factors were stable. All in all, with between twelve and fifteen factors extracted, each of the sixteen solutions appeared consistent with the parsimony criterion. With respect to the last of the most important criteria, all solutions generated a small proportion of non-redundant residuals, indicating that all the solutions fit the data adequately.

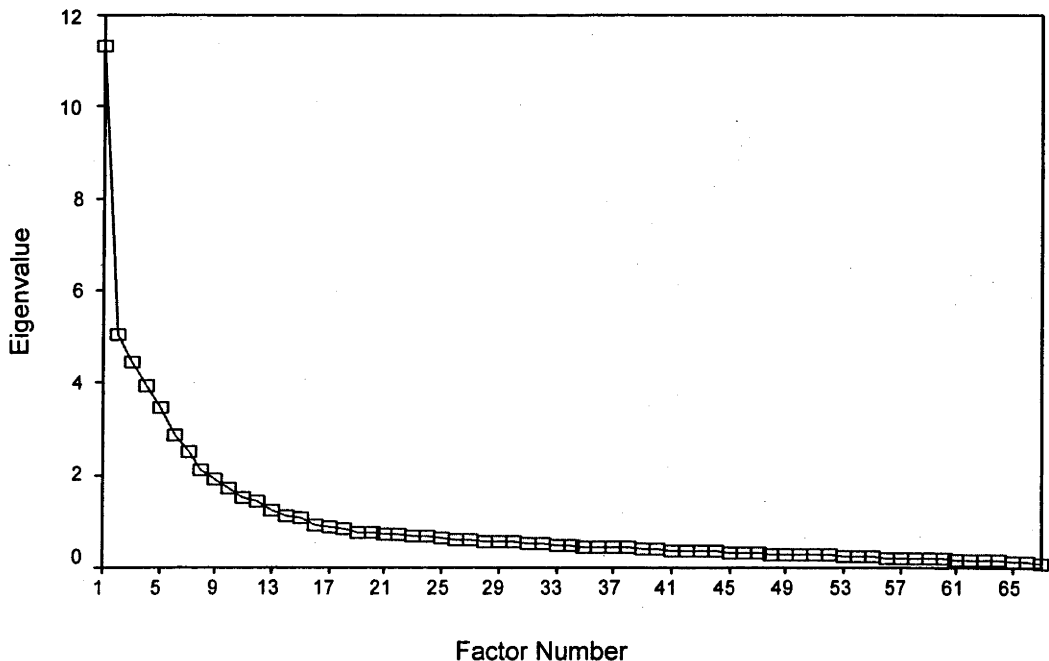


Figure 3.1. Scree plot for exploratory factor analysis of 67 items tapping community participation items using maximum likelihood extraction.

With respect to the secondary criteria generally, all solutions had the large majority of items loading substantially on the factors and the large majority of squared multiple correlations well above the acceptable cut-off. The solutions using varimax rotations explained between 63% and 68% of variance, well within the acceptable range. Across all solutions, there were between zero and two cross-loading items with loadings of greater than .45, and between zero and six greater than .32 in any solution. For an analysis involving this number of variables, a factor structure that is closing to simple is remarkable, particularly considering that both maximum likelihood extraction and oblimin rotation emphasise correlations (and thus cross-loadings) between factors.

Assessment of six potentially unstable factors

Despite the similarity between and generally high levels of adequacy of all the solutions, there were some differences between solutions in the interpretation, scientific value and statistical stability of the six factors that were not common to all solutions. An assessment of potentially unstable factors was thus particularly important in determining the final solution and a detailed evaluation is given below. A summary of the assessment of these six factors is presented in Table 3.3.

The six potentially unstable factors were all examples of factors with low eigenvalues. This means they were those explaining the least variance in the overall solution. In terms of Cattell's scree test, they were factors located between those that could confidently be extracted and those that were part of the scree. They were thus factors that may or may not be suitable for inclusion in a final solution.

Of these six potentially unstable factors, two of them, "giving money to charity" and "expressing opinions publicly", met all the evaluation criteria for factor adequacy and were suitable for inclusion in a final solution.

Table 3.3: Summary of analysis of potentially unstable factors.

	Factor name					
	Giving money to charity	Leadership in the voluntary sector	Reading the local press	Interest in local affairs	Voicing opinions publicly	Political action
Scientifically useful factor	Yes	Yes	No	Maybe	Yes	Maybe
Artefact of a particular extraction or rotation technique	No	Yes - appears in Maximum Likelihood extraction	Yes - appears with varimax rotation	Yes - appears with oblimin rotation	No	Yes - appears only in principal axis extraction
No. of items loading on factor at >.45	2 in all solutions	Between 0 and 2 for different solutions	Between 0 and 1 for different solutions	Between 2 and 3 for different solutions	Between 1 and 3 for different solutions	0 for varimax solution, 4 for oblimin solution
Bivariate correlations between items loading on factor	Pearson's $r = .57$, $p < .000$	Pearson's $r = .82$, $p < .000$	Pearson's $r = .39$, $p < .000$	Pearson's r range = .26 to .46, $p < .000$	Pearson's r range = .51 to .65, $p < .000$	Pearson's r range = .26 to .60, $p < .000$
Are the items significantly and substantially correlated with many other items in the data set?	No - though several small correlations	Yes - many substantial correlations	No - though some moderate correlations	No - though some moderate correlations	Yes - several moderate to large correlations	No - though several small to moderate correlations
Squared multiple correlation for factor (range across different solutions)	Range = .65-.70	Range = .68-.69	Range = .58-.69	Cannot be calculated in oblimin solutions	Range = .72-.76	.59
Factor is stable and suitable for use as a factor variate in further analyses	Yes	Marginal	No	No	Yes	No
Factor warrants inclusion in further analyses	Yes	Yes, but interpret with caution	No	No	Yes	No, but may warrant further research

That is, they were meaningful and scientifically useful, they were common to most of the solutions, they were not particular to one approach to extraction or rotation, they had a minimum number (two to three) items loading substantially on them, these items were significantly and substantially intercorrelated, and the squared multiple correlations for the factors ranged between .65 and .76 across different solutions.

A third factor, “leadership in the voluntary sector”, could not be confidently judged to be statistically stable. It was common to most solutions, and also had two highly intercorrelated items loading on it that did not appear to be correlated by virtue of being essentially two versions of the same item. Further, it had a squared multiple correlation of around .70 across solutions. However, the factor loadings for the items were not strong in all solutions, and there were indications of factor instability. For example, there were many substantial intercorrelations between the leadership items and other items in the data set, and the factor only appeared in solutions derived from maximum likelihood extraction. Nevertheless, as it was a meaningful and scientifically useful factor, it was on balance suitable for inclusion in the final solution, with the caveat that it would need to be examined carefully in further analyses.

A fourth factor, “political action”, was of marginal statistical stability. The factor only appeared in two of the sixteen solutions tried, the number of items loading on it varied, those items were significantly but not always substantially intercorrelated and the squared multiple correlation for the factor was .59, below the desirable cut-off of .70. Further, though the factor was meaningful, it was not of strong scientific interest. While the factor did not warrant inclusion in a final solution, it did indicate an area of possible future research. Two other factors, “interest in local affairs” and “reading the local press”, were meaningful but not scientifically useful and nor were they statistically stable. These factors were not suitable for inclusion in a final solution.

SELECTING A FOURTEEN-FACTOR SOLUTION

The optimal solution was one that contained the eleven factors common to all solutions together with the three meaningful and stable factors identified from among the six potentially unstable factors discussed above. The two fourteen-factor solutions using maximum likelihood extraction produced this optimal factor structure. An additional

advantage of this choice was that these solutions were based on the more theoretically appropriate method of factor extraction for this study.

Within the fourteen-factor solutions using maximum likelihood extraction, both approaches to rotation produced near-identical solutions. However, the item structures within the factors were not identical in two cases (see Table 3.4). Specifically, two of the items loading primarily on the “community activism” factor in one solution loaded on the “expressing opinions publicly” factor in the other solution, and vice versa. Similarly, two of the items loading primarily on the “volunteering” factor in one solution loaded on the “leadership in the voluntary sector” factor in the other solution, and vice versa.

In the end, there was little to choose between the two. Of the two fourteen-factor maximum likelihood solutions, therefore, the one using the oblimin rotation was selected on the basis that it was a theoretically more appropriate rotation, it produced a slightly clearer definition between the factors with switched items, and it was slightly preferable in terms of factor stability and size of loadings. However, if required, the solution with varimax rotation could be confidently employed as a basis for comparing sub-groups in the sample population or for creating factor scores for use in further analyses.

PRESENTING THE FINAL EXPLORATORY FACTOR SOLUTION: FOURTEEN DOMAINS OF COMMUNITY PARTICIPATION

In all, the aims of this analysis were well met. That is, the exploratory factor analysis confirmed that data on individual ways in which people participate in their communities could be accurately and meaningfully summarised to reveal a set of distinct types of community participation. The statistical procedures followed also showed that different items within each factor contributed differentially to explained variance within the factor, suggesting that applying weightings to items would generate more accurate composite scores than simpler approaches, such as summing or computing mean scores.

Table 3.4. Primary and secondary factor loadings of items that do not load primarily on the same factors for an exploratory factor analysis of 67 items tapping community participation using Maximum Likelihood factoring with varimax and oblimin rotations with 14 factors extracted.

Item	Solution with varimax rotation		Solution with oblimin rotation	
	Primary factor (loading)	Secondary factor (loading)	Primary factor (loading)	Secondary factor (loading)
If necessary, I talk to a local politician about issues in current affairs.	Community activism (.59)	Voicing opinions publicly (.41)	Voicing opinions publicly (.56)	Community activism (.26)
I write a letter to the newspaper or contact a radio station if I want to say what I think about something.	Community activism (.46)	Voicing opinions publicly (.43)	Voicing opinions publicly (.56)	Community activism (.11)
When it comes to voluntary work or helping out for free, I'm one of the leaders or organisers.	Volunteering (.79)	Leadership in the voluntary sector (.34)	Leadership in the voluntary sector (-.52)	Volunteering (.48)
If I do voluntary work or help out for free, I take on jobs like secretary, coordinator or treasurer.	Volunteering (.76)	Leadership in the voluntary sector (.39)	Leadership in the voluntary sector (-.55)	Volunteering (.41)

In overview, fourteen meaningful and scientifically useful factors were extracted, meeting the parsimony and meaningfulness criteria to an excellent degree. With respect to the parsimony criterion, the number of factors extracted fit well with suggestions by various authors about how many factors to expect to extract from a given size of data set. Some propose that the number of factors with eigenvalues greater than one falls somewhere between the number of variables used in the analysis divided by three and the number of variables divided by five (Tabachnik & Fidell 2001: p.620). Thus for 67 variables, the number of factors would lie approximately between 13 and 22. Others propose that the number of factors to extract should fall

between one-quarter and one-third of the number of variables to be factored (Diekhoff 1992: p.338), in this case, between 17 and 22 factors. As a rough guide, therefore, a factor structure that delivered an acceptable solution with between 13 and 22 factors would be broadly appropriate for this number of variables, and this was clearly well met. It was also broadly consistent with the hypothesised model set out in Figure 1.1.

Several criteria indicated that the solution was stable. First and foremost, this study has three important strengths with respect to factor analysing: it was based on a large sample (N=963); the sample was randomly selected from the general population; and the study goals, sampling and research strategies were purpose-designed with factor analysing in mind. Particularly with respect to this last point, the scientific risks commonly associated with the abuse of factor analysing, risks to do with research strategies such as data mining and post hoc methodological decision-making, are avoided.

More specific to the issue of solution stability are several further points. These are: the results of the selected solution were very similar to the results of all the other solutions examined; the squared multiple correlations for all factors were high to very high; only three factors had fewer than three substantial loadings, and detailed investigation indicated these were stable; and the very large majority of items (88%) loaded substantially on their factors, indicating factor stability and also indicating that most items were representative of their factors. A particularly unexpected feature of this solution, given the large number of variables in the data set and the correlated approach to extraction and rotation, was that it achieved near-simple structure. There were only two cross-loadings. Because the factor structure was very close to simple, and because of the size of the matrix, the full factor item loading matrix has not been presented. However, the two cross-loading items merit comment.

Only one of the items cross-loaded above the .45 threshold. This item was “When it comes to voluntary work or helping out for free I’m one of the leaders or organisers”, which loaded primarily on “leadership in the voluntary sector” with a loading of .52, and which also loaded on “volunteering” with a loading of .48. One other item cross-loaded in the .32 to .45 range. This was “If I do voluntary work of help out for free, I take on jobs like secretary, coordinator or treasurer”, which loaded primarily on

“leadership in the voluntary sector” with a loading of .55, and which also loaded on “volunteering” with a loading of .41. These items were the two items that made up the “leadership in the voluntary sector” factor. As this factor was one of the potentially unstable factors, the item and factor structure associated with these items were evaluated with particular care in further analyses.

With respect to data fit, the solution generated a small proportion of non-redundant residuals (N=73, 3%), indicating that reproduced correlations were faithful to the obtained values and offered a statistically acceptable solution for these data. Eigenvalues ranged from 1.10 to 11.33. Total variance explained by all factors together cannot be reported because, when factors are correlated, sums of squared loadings cannot be added.

A model of the final factor solution is presented in Figure 3.2.

The fourteen factors can be described as: contact with household members; contact with extended family; contact with friends; contact with neighbours; social contact with workmates; ongoing informal learning; religious observance; organised community activities; volunteering; leadership in the voluntary sector; giving money to charity; active interest in current affairs; expressing opinions publicly; and community activism. The factors, their items and factor loadings are presented in Table 3.5, together with the loadings for the alternative solution with varimax rotation.

COMPARING THE HYPOTHESISED MODEL OF COMMUNITY PARTICIPATION WITH THE OBTAINED FACTOR STRUCTURE

With respect to hypothesis# set out in Chapter 1, the exploratory factor analysis of 67 community participation items produced a fourteen-factor solution that was very similar to the sixteen-domain structure set out in the hypothesised model. Thirteen out of sixteen of the hypothesised domains of community participation emerged empirically as factors through the exploratory factor analysis.

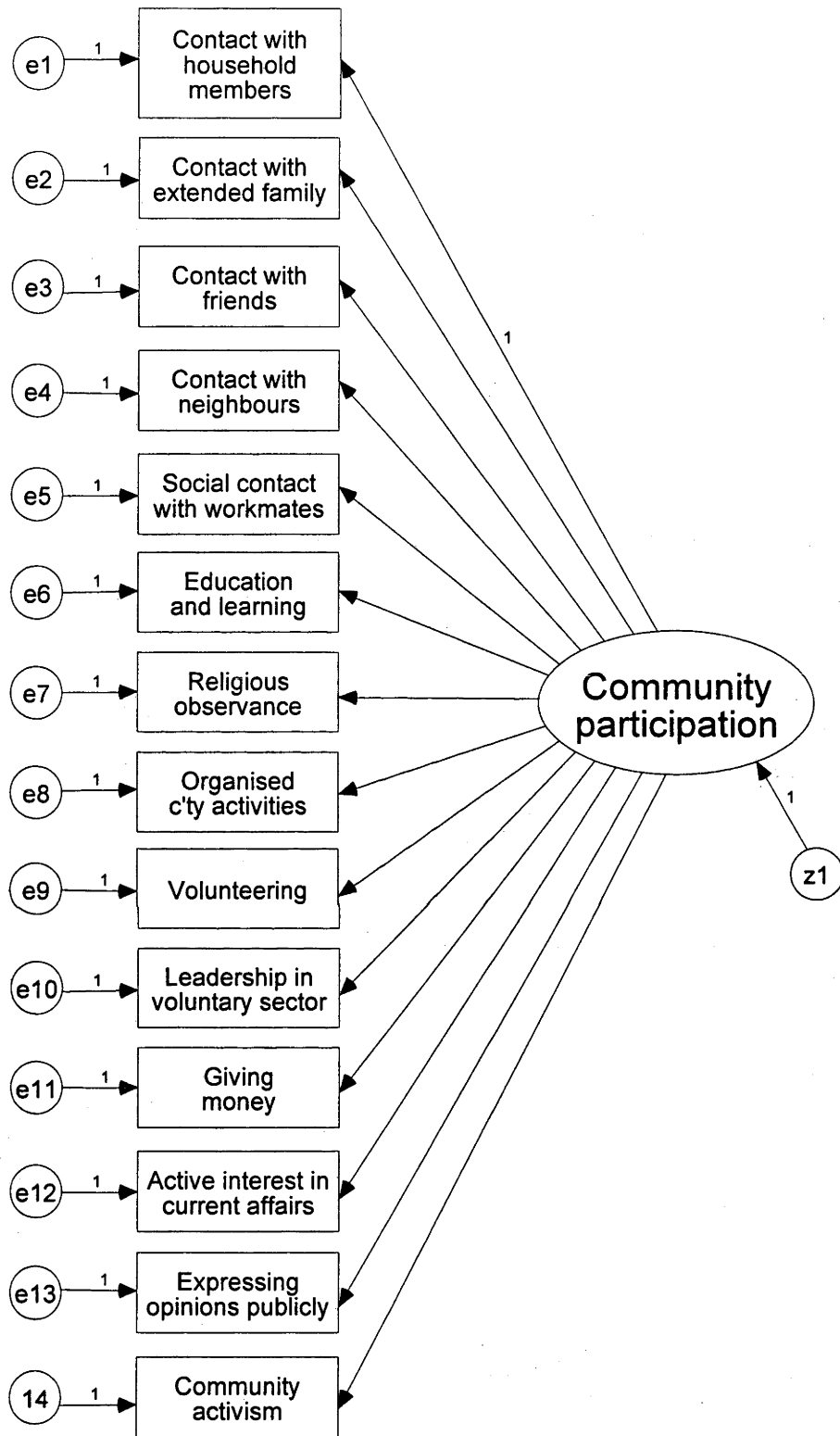


Figure 3.2. Domains of community participation based on the results of an exploratory factor analysis.

One domain appearing in the hypothetical structure, “taking an interest in local affairs”, did not emerge as a separate factor in the obtained solution; its items all loaded on the factor called “active interest in current affairs”. Two of the domains appearing in the hypothetical structure, “participating in community activism” and “leading community activism”, combined into one domain in the obtained factor solution, “community activism”.

In more detail, exactly the same items appeared in eight of the hypothesised and obtained domains: “contact with immediate household”; “contact with extended family”; “contact with friends”; “contact with neighbours”; “social contact with workmates”; “education and learning”; and “religious observance”. Most of the remaining items also loaded on the expected factors, but nine items switched from one domain in the hypothetical model to another in the obtained factor structure. The nine switched items, their hypothesised domains and their positions in the obtained factor solution are summarised in Table 3.6.

In sum, these items were associated with three domains in the hypothesised model (“giving money to charity”, “leadership in the voluntary sector” and “expressing opinions”) and four factors in the obtained factor structure (“volunteering”, “giving money to charity”, “active interest in current affairs” and “community activism”). Clearly, there was substantial overlap between the two sets of domains. But, of particular note, the hypothesised domain “expressing opinions” lost six of its original nine items to three different factors in the obtained factor solution. It was renamed “expressing opinions publicly” to better reflect its remaining three items.

Table 3.5. Factors, items and factor loadings for exploratory factor analyses of 67 items generating 14 factors tapping community participation using Maximum Likelihood factoring with both varimax and oblimin rotations.

Factor	Items	Factor loading	
		Varimax	Oblimin
Contact with household members	I eat my main meal with people in my immediate household	.95	.95
	I spend my spare time with my immediate household	.92	.92
	Members of my immediate household are home when I am	.90	.91
	I see people in my immediate household at the start of my day	.88	.89
Contact with extended family	I see members of my extended family in person	.88	.91
	I spend time doing things with people in my extended family	.85	.90
	I prepare or eat meals with people in my extended family	.76	.77
	I talk on the telephone to people in my extended family	.56	.54
Contact with friends	I make time to keep in touch with my friends	.81	.89
	My friends come over to my place or I go to theirs	.73	.77
	I talk to friends on the telephone or send them emails or letters	.73	.76
	I give my friends gifts such as birthday presents	.53	.53
Contact with neighbours	My neighbours tell me their news or I tell them mine	.90	.94
	I chat with my neighbours "over the fence" or "in the stairwell"	.82	.86
	I talk with my neighbours about what's going on in our neighbourhood	.81	.83
	My neighbours come over to my place or I go to theirs	.75	.76
Social contact with workmates	I socialise with my workmates before work, after work or during breaks	.88	.91
	I spend my lunch or tea-breaks with my workmates	.83	.85
	I do things at the weekend with people from work	.72	.71
	I go to work social events if I'm invited	.71	.71

Table 3.5. (continued). Factors, items and factor loadings for exploratory factor analyses of 67 items generating 14 factors tapping community participation using Maximum Likelihood factoring with both varimax and oblimin rotations.

Factor	Items	Factor loading	
		Varimax	Oblimin
Education and learning	I study, do assignments or sit exams for a certificate, diploma, degree or other qualification	.83	.87
	I participate in distance learning (eg, by correspondence, via the internet)	.69	.72
	I go to courses or evening classes whenever I can	.55	.56
	I take opportunities in my community to try out or learn new things	.34	.31
Religious observance	I make time to attend services at a place of worship	.92	-.96
	I go to prayer meetings with others who share my beliefs	.80	-.82
	I go to religious services for special events like weddings	.42	-.40
	I visit places of worship as a sightseer or tourist	.32	-.29
Organised community activities	I take an active part in organised group activities (eg, choir, sport)	.89	.94
	I attend at least one group that organises activities in my community	.82	.85
	I go to rehearsals, training sessions, meetings or other organised group activities	.75	.78
	I pay membership fees to a group that organises activities in my community	.71	.75
Volunteering	I do voluntary or charity work for local not-for-profit groups	.83	.92
	I do casual unpaid voluntary work or I help out for free locally	.80	.89
	If I'm in a group doing voluntary work or helping out for free, I take responsibility for getting things done	.78	.72
	I join organising committees for voluntary or not-for-profit groups	.81	.64
	I regularly renew my membership with a voluntary or not-for-profit group	.59	.53
	I subscribe to newsletters, magazines or papers published by a voluntary group or charity	.39	.32
Leadership in the voluntary sector	If I do voluntary work or help out for free, I take on jobs like secretary, coordinator or treasurer	.43	-.55
	When it comes to voluntary work or helping out for free I'm one of the leaders or organisers	.41	-.52

Table 3.5. (continued). Factors, items and factor loadings for exploratory factor analyses of 67 items generating 14 factors tapping community participation using Maximum Likelihood factoring with both varimax and oblimin rotations.

Factor	Items	Factor loading	
		Varimax	Oblimin
Giving money to charity	If I'm asked, I buy products sold by charities (eg, Blind Society Christmas cards)	.69	.76
	I give money to charity if I'm asked	.66	.71
	I sign petitions if I agree with the cause	.23	.22
Active interest in current affairs	I listen to the radio for news about national and international affairs	.67	.70
	I watch national and international news and current affairs on television	.68	.68
	I read articles in the paper about national and international affairs	.70	.68
	I talk about current affairs with my friends or family	.69	.67
	I follow current affairs about my community on a local or commercial radio station	.62	.63
	I watch current affairs of news programs about local events on TV	.63	.63
	I read articles in magazines about current affairs all over Australia and overseas	.60	.55
	I have opinions on issues in current affairs or the news	.52	.51
	I read a free local newspaper	.50	.50
	I read the <i>Southern Star</i> or the <i>Bay Post</i> (the two local pay newspapers)	.36	.35
Voicing opinions publicly	I write a letter to the newspaper or contact a radio station if I want to say what I think about current affairs	.43	.95
	If necessary I talk to a local politician about issues in current affairs	.41	.56
	I write to local politicians to tell them what I think about things	.72	.56

Table 3.5. (continued). Factors, items and factor loadings for exploratory factor analyses of 67 items generating 14 factors tapping community participation using Maximum Likelihood factoring with both varimax and oblimin rotations.

Factor	Items	Factor loading	
		Varimax	Oblimin
Community activism	I hand out leaflets for a group involved in current affairs	.76	.77
	I contact other members of my current affairs group to remind them to come to meetings, pay their dues, etc	.69	.74
	I encourage others to join a group involved in current affairs	.77	.74
	I get involved in organising a current affairs group	.65	.64
	I go to meetings of a group involved in current affairs in my community	.63	.64
	I go to meetings of a union, political party or a group that's for or against something	.65	.62
	I arrange meetings, send out information or help with other administrative tasks for a group involved in current affairs	.64	.61
	At election time I do things like display how to vote posters	.62	.60
	I join unions, political parties or groups that are for or against something	.55	.44
	I go on demonstrations or marches	.47	.33
	I do things like wear badges or display bumper stickers to do with issues in current affairs	.34	.25

TESTING THE FACTOR STRUCTURE OF COMMUNITY PARTICIPATION: INTRODUCTION TO STATISTICAL METHODS

While the obtained factor structure was very similar to that described in the hypothesised model, there was nevertheless some discordance between them and, particularly, between the placement of some items. An appropriate next step, therefore, was to test the fit of the obtained factor structure using a different approach to analysis, one more suited to theory testing than to theory development. This was achieved by using the first step in confirmatory factor analysis, which is building one-factor congeneric models.

Table 3.6. Hypothetical model of community participation compared with empirically obtained factor structure: analysis of nine switched items.

Switched items	Domains of community participation	
	Hypothetical model	Obtained factor structure
1. I subscribe to newsletters, magazines or papers published by a voluntary group or charity	Giving money to charity	Volunteering
2. If I'm in a group doing voluntary work or helping out for free, I take responsibility for getting things done	Leadership in the voluntary sector	Volunteering
3. I join organising committees for voluntary or not-for-profit groups	Leadership in the voluntary sector	Volunteering
4. I sign petitions if I agree with the cause	Expressing opinions	Giving money to charity
5. I talk about current affairs with my friends or family	Expressing opinions	Active interest in current affairs
6. I have opinions on issues in current affairs or the news	Expressing opinions	Active interest in current affairs
7. At election time I do things like display how to vote posters	Expressing opinions	Community activism
8. I go on demonstrations or marches	Expressing opinions	Community activism
9. I do things like wear badges or display bumper stickers to do with issues in current affairs	Expressing opinions	Community activism

One-factor congeneric models and confirmatory factor analysis

One-factor congeneric modelling is a subset of confirmatory factor analysing, itself one of a large family of statistical techniques grouped under the umbrella term of structural equation modelling. Commentary in this chapter is confined to issues relating to building one-factor congeneric models and confirmatory factor models, and is largely based on the work of Holmes-Smith (2001).

Like exploratory factor analysis, confirmatory factor analysis and its sub-set, one-factor congeneric modelling, is based on patterns of associations among a set of intuitively related variables. But while exploratory factor analysis is used in the early

stages of research to help reveal hypothesised processes underlying the set of variables, confirmatory factor analysis is used when hypothetical structures have been established and more precise and rigorous testing is required (Tabachnik & Fidell 2001: p.584).

Confirmatory factor models are represented as diagrams, like the hypothetical structure of participation shown in Figure 1.1. The model represents the researcher's hypothesis about an underlying concept, its components and how they relate. Conceptually, the model is constructed as a diagram, made up of a series of related latent concepts. These are by convention shown as ellipses, with the relationships among the concepts indicated by arrows depicting direction of causation. Observed variables measuring the latent concepts are presented in rectangles connected by arrows to the relevant ellipse, as shown. The arrows indicate the assumption that the latent concept, a phenomenon that cannot be directly measured, "causes" or gives rise to the observed variables that *can* be directly measured.

Each latent concept, together with the set of items measuring it, forms a single "one-factor congeneric model". This is a model that assumes that the items measuring the latent construct differ in the magnitude of the contribution they make to explaining variance in the latent variable, and in the measurement error associated with them. These one-factor congeneric models are the basic measurement models in confirmatory factor analysis. Building them is the first step in building the confirmatory factor model (reported in Chapter 4). The first step in testing a hypothesised factor structure is to test the validity of each one-factor model separately. Thus we begin with building a complete set of one-factor congeneric models for the hypothesised domains of community participation as suggested by the factor structure described in Table 3.5 and Figure 3.2.

More about one-factor congeneric models

In a little more detail, one-factor congeneric models are basic measurement models in which scores on a number of observed variables are combined in a weighted fashion to measure a latent trait. They differ from other forms of weighted combinations of observed variables in two important regards. One is that they model individual error variances for each item as well as modelling shared error variance between items and

the latent factor, and the error variance of the latent factor. Thus they differentiate between and take account of explained and unexplained variance. Secondly, it is possible to test statistically how well a one-factor congeneric model fits the data, and then to adjust the model to enhance fit with reference to a series of substantive and statistical criteria. One benefit this delivers is that it is possible to identify and, if appropriate, exclude items that are not valid indicators of a latent trait.

The final solution to a well-fitting one-factor congeneric model thus provides, among other things, a set of valid items and accurate weightings that can then be applied to the items to form composite scores for use in later analyses. As a result, it is possible to generate accurate composite scale reliabilities and to fix parameter estimates in more complex models. We shall return to this topic later. But, briefly, fixing parameter estimates (i) further enhances the accuracy of the estimates of the whole model, (ii) can make estimable a model that otherwise would not be, and (iii) reduces the required sample size. Sample size is a significant issue in structural equation modelling and is discussed further below. In sum, measurement of latent traits based on one-factor congeneric modelling is very accurate and also parsimonious in terms of number of items used to measure them and sample size required.

AIMS OF ONE-FACTOR CONGENERIC MODELLING IN THIS STUDY

Overall, there were four aims of the one-factor congeneric modelling in this chapter. These were: to evaluate the fit between the data and the hypothesised factors suggested by the exploratory factor analysis; to test and refine an optimal item structure for each domain of community participation; to identify valid items and generate weightings for the creation of composite scores for each domain of participation; and to build input elements required for confirmatory factor analysis.

Assumptions: sample size and normality of distribution

Structural equation modelling, including confirmatory factor analysis and one-factor congeneric modelling, requires large sample sizes because not only does it model variance associated with observed variables but also variance associated with latent (unobserved) variables. This means that a larger number of parameters are estimated, requiring a larger sample size. For this confirmatory model, there were 67 observed

variables and fourteen latent variables, each with a separate error term. Thus, in total, there were 162 parameters to be estimated. Applying a rough guide that ten cases are required per parameter to generate reliable estimates, a sample size of around 1620 cases was required. In terms of this guide the sample size in this study of $N=963$ would not have been adequate (though sample size requirements can be relaxed in data sets in which the factor loadings are substantial or there are several observed variables per unobserved variable, both of which are the case here). However, this model did not need to be fitted, for the reasons described below.

For the one-factor congeneric modelling, in which the basic measurement models are built one at a time, and therefore sample size requirements are much smaller. This is because for each one-factor congeneric model, only a few parameters are estimated at a time. Thus the sample size of $N=963$ is ample for this first step in testing the hypothesised factor structure. Further, the parameter estimates derived from the one-factor modelling can then be used to fix parameters in the full confirmatory model, greatly reducing the number of parameters to be estimated in that model.

However, unlike in exploratory factor analysis, in structural equation modelling, sample size requirements are complicated by non-normality in the distribution of observed variables. Indeed, when the distribution of variables is very skewed, as it is for many of the variables in this data set, the probability of rejecting an acceptable hypothesised model can be inflated to more than one in three. This is clearly an unacceptable level of risk of Type II error. The sample size required in such situations becomes very large, at least $1.5k(k+1)$, where k is the number of variables in the model. Based on the 67 items in this study, over 6800 cases would be required, and the present sample size of $N=963$ would be inadequate. Further, as well as computing sample moments such as means, variances and covariances, kurtosis statistics are also required with highly skewed data. This takes a huge amount of computing capacity, especially with very large samples, and such capacity is not readily available to many researchers.

To overcome these difficulties, an asymptotic distribution free (ADF) estimation procedure that does not assume normality of distribution is ideal. Alternatively, and more commonly available in standard software, a maximum likelihood estimation

procedure (which is robust even with small or non-normally distributed samples) is used together with a post hoc adjustment to two of the evaluation criteria – the Chi-square statistic and the standard error estimates. These criteria and others are discussed in more detail in the next section. In AMOS, the software used for this analysis, ADF estimation is available and was therefore used.

A final issue in dealing with sample size is relevant to this study. In some cases, such as in this study, not all the observed variables are used in the final model and the required sample size is reduced. This is because, as a result of building the one-factor congeneric models, a single composite score that is an accurate weighted combination of a set of valid items may be calculated for each latent concept in the model. This composite score becomes a single observed variable in the full confirmatory factor model, reducing the number of variables from 82 to 15. With only 15 variables, using the $1.5k(k+1)$ guide, the required sample size is reduced from around 6800 to around 360, and the current data set of $N=963$ cases is adequate. Further, as mentioned above, one-factor congeneric modelling produces a set of accurate parameter estimates, such that the error term for each latent variable is also known. These can then be fixed in more complex models, further reducing sample size requirements. Using ADF estimation, and with numbers of cases of $N=500$ for women, $N=463$ for men, $N=338$ for Long Civics, $N=364$ for Baby Boomers and $N=261$ for Generation X, sample sizes were adequate for all the sub-group comparisons.

Bimodal data

Finally, separately from issues of sample size, it should be noted that it is not possible to include in structural equation models variables with bimodal distributions. Such data have to be reduced to categorical variables or be deleted. In this study, it was appropriate to create dichotomous nominal variables out of the variables with bimodal distributions (17 out of 67 variables, or 25% of the data). That is, rather than analyzing scale values indicating the degree to which respondents reported engaging in a particular activity, scores were recorded as simply “1” or “0”, “engaging” or “not engaging” in the activity. Dichotomous nominal variables for the 17 variables with bimodal distributions were created by mean split.

The use of mean splits may create incommensurate combinations of responses if the split occurs close to either end of the response scale, in this case, for example, mixing those who never or rarely engage in a form of community participation with those who sometimes or often do. This would certainly have been the case had median splits been used to create dichotomous variables with these data. If incommensurate combinations of responses are created, substantive splits can be used instead, though this can lead to very unequal numbers of cases in each category and can thus result in a lack of variance in scores for use in later analyses. In the case of these data, mean splits were therefore preferable. However, an incommensurate combination of responses occurred to a small degree in the case of one variable (“I spend my spare time with my immediate household”). As this was an isolated case, and it did not affect the substantive meaning of the final dichotomised variable, a mean split was used for the sake of consistency.

Criteria for evaluating the models

A model is said to fit the data based on a holistic judgment with respect to a number of criteria. The first evaluated was the Chi-square statistic indicating whether the reproduced covariance matrix is statistically different from the observed matrix. To reject the null hypothesis in structural equation modelling, Chi-square should be *non-significant*, indicating the observed and reproduced matrices are not statistically different. This is the least important fit statistic because it is very sensitive to sample size: except with very small samples (which, as we have seen, are undesirable for other reasons) the Chi-square is usually significant. Nevertheless, a Chi-square value of $p > .05$ was obtained where possible.

The second criterion was the standard error of the estimate. If the estimate of a parameter is greater than twice its standard error, the parameter is statistically different from zero and should be retained in the model. The third criterion was the *t*-statistic, or critical ratio, that also indicates the significance of a parameter estimate. To reject the null hypothesis that the parameter is not statistically different from zero, the *t*-statistic should be greater than plus or minus two.

Fit indices

Fourth, goodness-of-fit indices were evaluated. These are the most important and comprehensive statistical indicators of model adequacy. They fall into three categories: absolute fit indices; incremental fit indices; and indices of model parsimony. A well-fitting model would be expected to fit on a wide range of indices and, in such situations, the researcher reports whichever indices she or he prefers (see Table 3.7). Generally, the most important and frequently reported absolute fit indices are the Root Mean Square Error of Approximation (RMSEA) and the Root Mean Square Residual (RMR). The most important incremental fit indices are the Goodness-of-Fit Indicator (GFI) and the Adjusted Goodness-of-Fit Indicator (AGFI), the Rho²/Tucker Lewis Index (TLI) and the Comparative Fit Index (CFI). Of the two parsimony statistics, the Akaike Information Criterion (AIC) and the Consistent Akaike Information Criterion (CAIC), the AIC is preferred to the very conservative CAIC.

The parsimony indices do not have particular cut-off values associated with them and their values are not normally reported. These indices are based on the assumption that the fewer the parameters in a model, the more likely it is that the model will be able to be generalised from the sample to the general population. Further, any model may be made to fit a data set by saturating it, that is, by including all possible parameters. The AIC and CAIC are methods of calculating penalties for every parameter added to a model. Model modification is discussed more in the next section. But, briefly, the values of the indices start out large. As parameters are modified, and the fit of the model improved, the statistic gets smaller, until it is quite small. If parameters continue to be added, the statistic starts to get bigger again. The best fitting model in terms of the parsimony fit indices is the model at which the lowest value was achieved during the process of modifying parameters.

Fifth, item reliabilities were examined. In one-factor congeneric models, item reliability is indicated by the squared multiple correlation of the item. Optimally, this will be greater than .50, though items with squared multiple correlations as small as .30

Table 3.7. Commonly reported goodness-of-fit indices for structural equation models.

Index name	Acronym	Range	Acceptable values
Absolute fit statistics			
Chi-squared	CMIN	N/a	p>.05
Normed Chi-squared	CMIN/DF	N/a	Usually 1 to 2
Root Mean Square Error of Approximation	RMSEA	0-1	<.05-.08
Root Mean Square Residual	RMR	0-1	<.05
Incremental fit indices			
Goodness-of-fit Indicator	GFI	0-1	>.90
Adjusted goodness-of-fit Indicator	AGFI	0-1	>.90
Rho2/Tucker Lewis Index*	TLI	0-1	>.90
Comparative Fit Index	CFI	0-1	>.95
Normed Fit Index	NFI	0-1	>.90
Indices of model parsimony			
Akaike Information Criterion	AIC	Varies	Lowest possible
Consistent Akaike Information Criterion	CAIC	Varies	Lowest possible

* The Tucker Lewis Index sometimes has a value greater than 1.

may be acceptable and retained in the model if there are theoretical reasons to do so. For this study, as all items were theoretically acceptable, item reliability cut-points were set at greater than .30. Finally, maximised scale reliabilities (squared multiple correlations for the factors) were examined and evaluated together with the more conservative Cronbach's α reliability. These indicate the internal consistency of the composite scales, with the maximised scale reliability the more accurate of the two measures. This is because Cronbach's α reliability assumes tau-equivalent models. That is, all items are assumed to contribute equally to explaining variance in the concept they measure and have equal error variances, while the maximised scale reliability does not. Though scale development was not a goal of this study, high reliability values are desirable because they indicate that the composite is an accurate measure of true scores.

Modifying the models

Models that do not fit the data may be modified. Modifying models means adding, removing or changing the nature of relationships among variables in the model,

including among error terms. There are three main statistical indicators that model modification is advisable: fit indices show, on balance, that the model does not fit the data well; modification indices suggest a different model would fit the data better; and there are non-significant paths in the model. Consistent with the assumptions of the parsimony fit criteria, the first step in modifying the models is to remove non-significant paths. These are paths with a critical ratio of less than two. Modification indices are then inspected to identify whether any parameter changes would improve the model fit. If so, parameters are modified one at a time, starting with the one that would have the greatest effect on the model fit if it were modified. Parameters are only modified when it makes substantive sense to do so. Thus if it does not make sense to modify the parameter with the largest modification index, the parameter with the next largest index is considered, and so on, until an appropriate parameter is identified. Following modification of this parameter, the change on the overall model is comprehensively evaluated and the process repeated until an optimal solution is identified.

A particular goal of one-factor congeneric model building is to identify, with a view to the possibility of excluding, items that reduce the construct validity of the measurement model. These items may be identified before structural modelling begins, for example, during preliminary data screening. In one-factor congeneric modelling, outlying items are those that have low regression weights, squared multiple correlations of less than .30, low factor weights or which, following model modification based on the modification indices, require several covariances on their error term, indicating the likelihood of collinearity with another variable. Items that exhibit some or all of these characteristics may be considered for deletion from the model.

ONE-FACTOR CONGENERIC MODELS OF DOMAINS OF COMMUNITY PARTICIPATION

First steps in building the models for this study

Fourteen one-factor congeneric models were constructed for this study, following the hypothesised structure suggested by the exploratory factor analysis (see Figure 3.2 as an example). As is conventional, a regression weight of 1 was assigned in each model

to the parameter representing the highest loading item for each factor, as suggested by the exploratory factor analysis. This is a necessary step in building the models, but the choice of which parameter to assign the weighting of 1 does not affect the outcome of the computations. However, all parameters are estimated with reference to that parameter, giving it a status equivalent to a “marker variable” in exploratory factor analysis, and aiding later interpretation of results.

One-factor congeneric modelling is a form of latent factor modelling, and the models must in theory include a minimum of two observed variables. But in practice, it is not possible to fit two-variable models because the equations to be solved do not contain sufficient known parameters to estimate the unknown parameters. Such models are known as “unidentified” models and, in this case, additional parameters have to be fixed. This can sometimes be done, for example, if the items belong to a standardised scale with known item weightings. If it is not possible to fix additional parameters, fitting must be abandoned in favour of some other strategy.

This was the case in one of the models in this study. The number of observed variables loading on each of the fourteen factors derived from the exploratory factor analysis (and thus in the present models) ranged from two to eleven. One factor,

“leadership in the voluntary sector”, had only two variables. As it was not possible to fix additional parameters, the two variables belonging to the leadership factor were included in the “volunteering” model, as suggested by the alternative hypothetical model derived from the exploratory factor analysis conducted with varimax rotation. As we saw earlier in the chapter, the leadership factor was one to be carefully analysed later, and this conservative approach is appropriate. However, as we saw in Chapter 1, leadership in the voluntary sector is a scientifically important concept, one that could not now be analysed in this study. This is therefore an important matter for future research.

A related problem arises with three-variable models. These models are “saturated”, that is, contain the same number of known as unknown parameters. As a result, it is only possible to generate one solution to the equations. Structural equation modelling relies on having more parameters than are minimally required and thus being able to

generate a series of alternative solutions to the equations that can be compared with one another. Fit indices are computed that enable the researcher to evaluate the relative fit of different solutions relative to the observed data and thus to identify an optimal and well-fitting solution. But while it is not possible to evaluate the fit of a three-item model, it is nevertheless possible to generate accurate item weightings for the construction of composite scores, which was a requirement of this study, and also to generate accurate regression weight estimates and squared multiple correlations. These allow some evaluation of the quality of the factor structure, and the item weightings could be used to create composite scores. Two factors in this study, “giving money to charity” and “expressing opinions publicly”, had three variables.

Table 3.8. Summary of model fit statistics for one-factor congeneric models comparing the hypothesised model (Model A) and the fitted model (Model B) for fourteen domains of community participation.

Domain of community participation	Selected indices	Acceptable values	Sample statistic		Meets criterion	
			Model A	Model B	Model A	Model B
Contact with household members	Absolute fit	See table 3.xx	See table 3.xx		✓	✓
	Incremental fit	See table 3.xx	See table 3.xx		✓	✓
	Item reliability	SMC > .30-.50	.50-.79	.53-.72	✓	✓
	Cronbach α	> .70 approx	N/a	.96	N/a	✓
Contact with extended family	Absolute fit	See table 3.xx	See table 3.xx		✓	N/a, model fitted without modifying
	Incremental fit	See table 3.xx	See table 3.xx		✓	
	Item reliability	SMC > .30-.50	.35-.81	N/a	✓	
	Cronbach α	> .70 approx	.86	N/a	✓	
Contact with friends	Absolute fit	See table 3.xx	See table 3.xx		✓	✓
	Incremental fit	See table 3.xx	See table 3.xx		✓	✓
	Item reliability	SMC > .30-.50	.38-.74	.33-.75	✓	✓
	Cronbach α	> .70 approx	N/a	.85	N/a	✓
Contact with neighbours	Absolute fit	See table 3.xx	See table 3.xx		✓	✓
	Incremental fit	See table 3.xx	See table 3.xx		✓	✓
	Item reliability	SMC > .30-.50	.65-.89	.58-.93	✓	✓
	Cronbach α	> .70 approx	N/a	.92	N/a	✓
Social contact with workmates	Absolute fit	See table 3.xx	See table 3.xx		✓	N/a, model fitted without modifying
	Incremental fit	See table 3.xx	See table 3.xx		✓	
	Item reliability	SMC > .30-.50	.38-.65	N/a	✓	
	Cronbach α	> .70 approx	.88	N/a	✓	
Ongoing informal learning	Absolute fit	See table 3.xx	See table 3.xx		✓	✓
	Incremental fit	See table 3.xx	See table 3.xx		✓	✓
	Item reliability	SMC > .30-.50	.30-.65	.15-.82	✓	✓
	Cronbach α	> .70 approx	N/a	.74	N/a	✓

Table 3.8 (continued). Summary of model fit statistics for one-factor congeneric models comparing the hypothesised model (Model A) and the fitted model (Model B) for fourteen domains of community participation.

Domain of community participation	Selected indices	Acceptable values	Sample statistic		Meets criterion	
			Model A	Model B	Model A	Model B
Religious observance	Absolute fit	See table 3.xx	See table 3.xx		X	✓
	Incremental fit	See table 3.xx	See table 3.xx		X	✓
	Item reliability	SMC > .30-.50	.15-.74	.12-.77	X	X
	Cronbach α	> .70 approx	N/a	.76	N/a	✓
Organised community activities	Absolute fit	See table 3.xx	See table 3.xx		✓	N/a, model fitted without modifying
	Incremental fit	See table 3.xx	See table 3.xx		✓	
	Item reliability	SMC > .30-.50	.54-.87	N/a	✓	
	Cronbach α	> .70 approx	.90	N/a	✓	
Volunteering	Absolute fit	See table 3.xx	See table 3.xx		X	✓
	Incremental fit	See table 3.xx	See table 3.xx		✓	✓
	Item reliability	SMC > .30-.50	.29-.72	.39-.75	X	✓
	Cronbach α	> .70 approx	N/a	N/a	N/a	N/a
Leadership in the voluntary sector	Absolute fit	See table 3.xx	Model could not be fitted.			
	Incremental fit	See table 3.xx				
	Item reliability	SMC > .30-.50				
	Cronbach α	> .70 approx				
Giving money to charity	Absolute fit	See table 3.xx	See table 3.xx		?	?
	Incremental fit	See table 3.xx	See table 3.xx		?	?
	Item reliability	SMC > .30-.50	.11-.66	.11-.66	X	X
	Cronbach α	> .70 approx	N/a	.64	N/a	X
Active interest in current affairs	Absolute fit	See table 3.xx	See table 3.xx		X	✓
	Incremental fit	See table 3.xx	See table 3.xx		X	✓
	Item reliability	SMC > .30-.50	.11-.53	.26-.57	X	X
	Cronbach α	> .70 approx	N/a	.85	N/a	✓

Table 3.8 (continued). Summary of model fit statistics for one-factor congeneric models comparing the hypothesised model (Model A) and the fitted model (Model B) for fourteen domains of community participation.

Domain of community participation	Selected indices	Acceptable values	Sample statistic		Meets criterion	
			Model A	Model B	Model A	Model B
Expressing opinions publicly	Absolute fit	See table 3.xx	See table 3.xx		?	?
	Incremental fit	See table 3.xx	See table 3.xx		?	?
	Item reliability	SMC > .30-.50	.47-.75	.47-.75	✓	✓
	Cronbach α	> .70 approx	N/a	.85	N/a	✓
Community activism	Absolute fit	See table 3.xx	See table 3.xx		✗	✓
	Incremental fit	See table 3.xx	See table 3.xx		✗	✓
	Item reliability	SMC > .30-.50	.15-.62	.44-.62	✗	✓
	Cronbach α	> .70 approx	N/a	.88	N/a	✓
Voluntary sector activity	Absolute fit	See table 3.xx	See table 3.xx		✗	✓
	Incremental fit	See table 3.xx	See table 3.xx		✗	✓
	Item reliability	SMC > .30-.50	.42-.82	.37-.87	✓	✓
	Cronbach α	> .70 approx	N/a	.90	N/a	✓

Table 3.9. Summary of fit indices for one-factor congeneric models comparing the hypothesised model (Model A) and the fitted model (Model B) for fourteen domains of community participation.

Domain of community participation	Selected indices	Acceptable values	Sample statistic		Meets criterion	
			Model A	Model B	Model A	Model B
Contact with household members (AIC: start=36.97; end=19.57)	CMIN	p>.05	.00	.21	X	✓
	CMIN/DF	1 to 2	10.40	1.57	X	✓
	RMSEA	<.05-.08	.10	.02	X	✓
	RMR	<.05	.01	.00	✓	✓
	GFI	>.90	1.00	1.00	✓	✓
	AGFI	>.90	.99	1.00	✓	✓
	TLI	>.90	.91	.99	✓	✓
	CFI	>.95	.97	1.00	✓	✓
	NFI	>.90	.97	1.00	✓	✓
	CMIN	p>.05	.38		✓	
Contact with extended family (AIC: start=17.93; end=n/a)	CMIN/DF	1 to 2	.97		✓	
	RMSEA	<.05-.08	.00		✓	
	RMR	<.05	.01		✓	
	GFI	>.90	1.00		✓	
	AGFI	>.90	.99		✓	
	TLI	>.90	1.00		✓	
	CFI	>.95	1.00		✓	
	NFI	>.90	1.00		✓	
	CMIN	p>.05	.38		✓	
	CMIN/DF	1 to 2	.97		✓	

Table 3.9 (continued). Summary of fit indices for one-factor congeneric models comparing the hypothesised model (Model A) and the fitted model (Model B) for fourteen domains of community participation.

Domain of community participation	Selected indices	Acceptable values	Sample statistic		Meets criterion	
			Model A	Model B	Model A	Model B
Contact with friends (AIC: start=36.39; end=25.04)	CMIN	p>.05	.00	.01	X	X
	CMIN/DF	1 to 2	10.19	7.04	X	X
	RMSEA	<.05-.08	.10	.08	X	✓
	RMR	<.05	.02	.01	✓	✓
	GFI	>.90	.99	1.00	✓	✓
	AGFI	>.90	.95	.96	✓	✓
	TLI	>.90	.88	.93	X	✓
	CFI	>.95	.96	.99	✓	✓
	NFI	>.90	.96	.99	✓	✓
Contact with neighbours (AIC: start=60.89; end=25.22)	CMIN	p>.05	.00	.01	X	X
	CMIN/DF	1 to 2	22.44	7.22	X	X
	RMSEA	<.05-.08	.15	.08	X	✓
	RMR	<.05	.03	.01	✓	✓
	GFI	>.90	.97	1.00	✓	✓
	AGFI	>.90	.86	.96	X	✓
	TLI	>.90	.83	.95	X	✓
	CFI	>.95	.94	.99	X	✓
	NFI	>.90	.94	.99	✓	✓

Table 3.9 (continued). Summary of fit indices for one-factor congeneric models comparing the hypothesised model (Model A) and the fitted model (Model B) for fourteen domains of community participation.

Domain of community participation	Selected indices	Acceptable values	Sample statistic		Meets criterion	
			Model A	Model B	Model A	Model B
Social contact with workmates (AIC: start=25.47; end=n/a)	CMIN	p>.05	.01		X	
	CMIN/DF	1 to 2	4.74	N/a – model fits without modification	X	N/a – model fits without modification
	RMSEA	<.05-.08	.06		✓	
	RMR	<.05	.00		✓	
	GFI	>.90	.99		✓	
	AGFI	>.90	.96		✓	
	TLI	>.90	.91		✓	
	CFI	>.95	.97		✓	
	NFI	>.90	.97		✓	
Ongoing informal learning (AIC: start=72.14; end=18.01)	CMIN	p>.05	.00	.94	X	✓
	CMIN/DF	1 to 2	28.07	.01	X	✓
	RMSEA	<.05-.08	.17	.00	X	✓
	RMR	<.05	.16	.00	X	✓
	GFI	>.90	.93	1.00	✓	✓
	AGFI	>.90	.65	1.00	X	✓
	TLI	>.90	.22	1.03	X	✓
	CFI	>.95	.74	1.00	X	✓
	NFI	>.90	.74	1.00	X	✓

Table 3.9 (continued). Summary of fit indices for one-factor congeneric models comparing the hypothesised model (Model A) and the fitted model (Model B) for fourteen domains of community participation.

Domain of community participation	Selected indices	Acceptable values	Sample statistic		Meets criterion	
			Model A	Model B	Model A	Model B
Religious observance (AIC: start=38.85; end=19.35)	CMIN	p>.05	.00	.25	✗	✓
	CMIN/DF	1 to 2	11.42	1.35	✗	✓
	RMSEA	<.05-.08	.10	.02	✗	✓
	RMR	<.05	.01	.00	✓	✓
	GFI	>.90	1.00	1.00	✓	✓
	AGFI	>.90	.98	1.00	✓	✓
	TLI	>.90	.81	.99	✗	✓
	CFI	>.95	.94	1.00	✗	✓
	NFI	>.90	.93	1.00	✓	✓
	CMIN	p>.05	.24		✓	
Organised community activities (AIC: start=18.83; end=n/a)	CMIN/DF	1 to 2	1.41	N/a – model fits without modification	✓	N/a – model fits without modification
	RMSEA	<.05-.08	.02		✓	
	RMR	<.05	.01		✓	
	GFI	>.90	1.00		✓	
	AGFI	>.90	1.00		✓	
	TLI	>.90	1.00		✓	
	CFI	>.95	1.00		✓	
	NFI	>.90	1.00		✓	

Table 3.9 (continued). Summary of fit indices for one-factor congeneric models comparing the hypothesised model (Model A) and the fitted model (Model B) for fourteen domains of community participation.

Domain of community participation	Selected indices	Acceptable values	Sample statistic		Meets criterion	
			Model A	Model B	Model A	Model B
Volunteering (AIC: start=118.01; end=25.45)	CMIN	p>.05	.00	.70	X	✓
	CMIN/DF	1 to 2	10.44	.48	X	✓
	RMSEA	<.05-.08	.10	.00	X	✓
	RMR	<.05	.02	.00	✓	✓
	GFI	>.90	.97	1.00	✓	✓
	AGFI	>.90	.92	1.00	✓	✓
	TLI	>.90	.95	1.00	✓	✓
	CFI	>.95	.97	1.00	✓	✓
	NFI	>.90	.97	1.00	✓	✓
	Cannot be reported : model could not be estimated					
Leadership in the voluntary sector (AIC: n/a) Note: model unidentified and could not be estimated. Items included in "volunteering" domain, renamed "voluntary sector activity"	CMIN	p>.05				
	CMIN/DF	1 to 2				
	RMSEA	<.05-.08				
	RMR	<.05				
	GFI	>.90				
	AGFI	>.90				
	TLI	>.90				
	CFI	>.95				
	NFI	>.90				
	Cannot be reported : model could not be estimated					

Table 3.9 (continued). Summary of fit indices for one-factor congeneric models comparing the hypothesised model (Model A) and the fitted model (Model B) for fourteen domains of community participation.

Domain of community participation	Selected indices	Acceptable values	Sample statistic		Meets criterion	
			Model A	Model B	Model A	Model B
Giving money to charity (AIC: n/a) Note: Model saturated; fit indices cannot be reported	CMIN	p>.05				
	CMIN/DF	1 to 2				
	RMSEA	<.05-.08				
	RMR	<.05				
	GFI	>.90				
	AGFI	>.90				
	TLI	>.90				
	CFI	>.95				
	NFI	>.90				
					N/a – model saturated	
Active interest in current affairs (AIC: start=619.62; end=65.36)	CMIN	p>.05	.00	.17	X	✓
	CMIN/DF	1 to 2	16.56	1.40	X	✓
	RMSEA	<.05-.08	.13	.02	X	✓
	RMR	<.05	.06	.02	X	✓
	GFI	>.90	.89	.99	X	✓
	AGFI	>.90	.83	.98	X	✓
	TLI	>.90	.79	.98	X	✓
	CFI	>.95	.84	.99	X	✓
	NFI	>.90	.83	.98	X	✓

Table 3.9 (continued). Summary of fit indices for one-factor congeneric models comparing the hypothesised model (Model A) and the fitted model (Model B) for fourteen domains of community participation.

Domain of community participation	Selected indices	Acceptable values	Sample statistic		Meets criterion		
			Model A	Model B	Model A	Model B	
Expressing opinions publicly (AIC: n/a) Note: Model saturated; fit indices cannot be reported	CMIN	p>.05					
	CMIN/DF	1 to 2					
	RMSEA	<.05-.08					
	RMR	<.05					
	GFI	>.90					
	AGFI	>.90					
	TLI	>.90					
	CFI	>.95					
	NFI	>.90					
Community activism (AIC: start=632.67; end=31.36)	CMIN	p>.05	.00		.85	X	✓
	CMIN/DF	1 to 2	13.38		.48	X	✓
	RMSEA	<.05-.08		.11	.00	X	✓
	RMR	<.05		.06	.02	X	✓
	GFI	>.90		.89	.98	X	✓
	AGFI	>.90		.84	.95	X	✓
	TLI	>.90		.84	1.12	X	✓
	CFI	>.95		.87	1.00	X	✓
	NFI	>.90		.87	.96	X	✓

Table 3.9 (continued). Summary of fit indices for one-factor congeneric models comparing the hypothesised model (Model A) and the fitted model (Model B) for fourteen domains of community participation.

Domain of community participation	Selected indices	Acceptable values	Sample statistic		Meets criterion	
			Model A	Model B	Model A	Model B
Voluntary sector activity (AIC: start=179.86; end=55.45)	CMIN	p>.05	.00	.35	X	✓
	CMIN/DF	1 to 2	10.85	1.11	X	✓
	RMSEA	<.05-.08	.10	.01	X	✓
	RMR	<.05	.05	.01	✓	✓
	GFI	>.90	1.00	1.00	✓	✓
	AGFI	>.90	.99	1.00	✓	✓
	TLI	>.90	.85	1.00	X	✓
	CFI	>.95	.90	1.00	X	✓
	NFI	>.90	.89	1.00	X	✓
	CMIN	p>.05	.00	.07	X	✓
Political action (AIC: start=43.97; end=21.42)	CMIN/DF	1 to 2	4.79	2.71	X	X
	RMSEA	<.05-.08	.06	.04	✓	✓
	RMR	<.05	.11	.03	X	✓
	GFI	>.90	.95	.99	✓	✓
	AGFI	>.90	.84	.93	X	✓
	TLI	>.90	.69	.92	X	✓
	CFI	>.95	.84	.97	X	✓
	NFI	>.90	.82	.96	X	✓

Steps in model fitting in this study

Table 3.8 summarises the fit statistics for the hypothesised and fitted models for each domain of community participation, including the start and end values for the Akaike Information Criterion (AIC), and a summary of the goodness-of-fit indices. Details of the fit indices are presented in full in Table 3.9. In all cases, the AIC was smaller after model fitting than it was at the start, indicating that fitting had not been achieved by saturating, or near-saturating, the models. Both tables include two new models. One is “voluntary sector activity”, which is a combination of two of the hypothesised models, “volunteering” and “leadership in the voluntary sector”, which were combined for the reasons explained above. The other is a model called “political action”. Both are discussed individually later.

Item and scale reliabilities are reported. However, as scale development was not a goal of this study, where item or scale reliabilities were not strong, they did not result in the rejection of an otherwise well-fitting model. This was the case with three models, “giving money to charity”, “active interest in current affairs”, and “religious observance”. Critical ratios and standard errors of the estimate are not individually reported because they are very numerous and, in all cases, they fell well within acceptable bounds in the final fitted models.

During fitting, four outlying items were excluded from the models because this enhanced the fit of the model and accorded with the criteria of parsimony and of selecting valid items for creating composite scores. The deleted items were drawn from four of the hypothetical models: “volunteering”, “active interest in current affairs” and “community activism”. The two items belonging to “leadership in the voluntary sector” were deleted from their model but not deleted from the data set: instead, they were included in a new domain, “voluntary sector activity”, as described previously. From the five items deleted from the “community activism” domain, four were combined in the new “political action” domain. A list of the four deleted and the six reassigned items, together with their hypothesised domains, appears in Table 3.10. The 63 retained items (67 original items, less four deleted items), their item weightings (for composite score calculation), squared multiple correlations (item reliability coefficients) and standardised regression weights (bivariate correlations with the factor

and an indication of the strength of the relationship between the item and its factor) are presented in Table 3.11.

Potentially outlying items that, following testing, could not be deleted without worsening the fit with the data, were retained in their models. These were likely to be collinear items, and error terms were covaried as suggested by the modification indices. It should be noted that, in structural equation modelling, of which one-factor congeneric modelling is a basic element, covarying error terms is a commonly used step in fitting models. However, this should not in fact be undertaken without theoretical reason to do so. The main theoretical reason to covary error terms, as mentioned, is when collinearity among variables is possible.

Table 3.10. Three items deleted, and seven items moved into another factor, based on analyses of fourteen one-factor congeneric models of community participation.

Domain of participation	Items deleted from models or moved to other models
Deleted items	
Volunteering	I subscribe to newsletters, magazines or papers published by a voluntary group or charity
Active interest in current affairs	I read a free local newspaper I read the <i>Southern Star</i> or the <i>Bay Post</i> (the two local pay newspapers)
Moved items	
Leadership in the voluntary sector ¹⁸	If I do voluntary work or help out for free, I take on jobs like secretary, coordinator or treasurer When it comes to voluntary work or helping out for free I'm one of the leaders or organizers
Community activism ¹⁹	I go to meetings of a union, political party or a group that's for or against something At election time I do things like display how to vote posters I join unions, political parties or groups that are for or against something I go on demonstrations or marches I do things like wear badges or display bumper stickers to do with issues in current affairs

¹⁸ Domain deleted. Both items transferred to new domain, "voluntary sector activity" and retained in the data set.

¹⁹ Items recombined, less the "display posters" item, into a new factor: "political action".

Table 3.11. Items retained in thirteen one-factor congeneric models of community participation, their domains, item weightings, squared multiple correlations, and standardised regression weights.

Domain of participation	Items retained in models	Item weighting	Squared multiple correlation	Standardised regression weight
Contact with immediate household	I see people in my immediate household at the start of my day	.32	.71	.84
	Members of my immediate household are home when I am	.12	.53	.73
	I spend my spare time with my immediate household	.20	.55	.74
	I eat my main meal with people in my immediate household	.26	.72	.85
Contact with extended family	I spend time doing things with people in my extended family	.29	.61	.86
	I talk on the telephone to people in my extended family	.08	.81	.59
	I see members of my extended family in person	.42	.35	.90
	I prepare or eat meals with people in my extended family	.18	.74	.78
Contact with friends	I make time to keep in touch with my friends	.34	.75	.87
	My friends come over to my place or I go to theirs	.26	.66	.81
	I talk to friends on the telephone or send them emails or letters	.22	.63	.80
	I give my friends gifts such as birthday presents	.06	.33	.57
Contact with neighbours	I chat with my neighbours "over the fence" or "in the stairwell"	.16	.72	.85
	My neighbours tell me their news or I tell them mine	.67	.93	.96
	My neighbours come over to my place or I go to theirs	.06	.58	.76
	I talk with my neighbours about what's going on in our neighbourhood	.11	.68	.83
Social contact with workmates	I go to work social events if I'm invited	.14	.38	.61
	I do things at the weekend with people from work	.21	.47	.68
	I spend my lunch or tea-breaks with my workmates	.21	.51	.72
	I socialise with my workmates before work, after work or during breaks	.34	.65	.80

Table 3.11 (continued). Items retained in thirteen one-factor congeneric models of community participation, their domains, item weightings, item squared multiple correlation, and regression weights.

Domain of participation	Items retained in models	Item weighting	Squared multiple correlation	Standardised regression weight
Ongoing informal learning	I participate in distance learning (eg, by correspondence, via the internet)	.00	.15	.39
	I study, do assignments or sit exams for a certificate, diploma, degree or other qualification	.06	.23	.53
	I go to courses or evening classes whenever I can	.43	.82	.91
Religious observance	I take opportunities in my community to try out or learn new things	.06	.26	.51
	I make time to attend services at a place of worship	.56	.77	.88
	I go to religious services for special events like weddings	.05	.13	.37
	I go to prayer meetings with others who share my beliefs	.28	.60	.77
	I visit places of worship as a sightseer or tourist	.04	.12	.35
Organised community activities	I take an active part in organised group activities (eg, choir, sport)	.50	.87	.93
	I attend at least one group that organises activities in my community	.24	.75	.87
	I go to rehearsals, training sessions, meetings or other organised group activities	.15	.63	.79
	I pay membership fees to a group that organises activities in my community	.11	.54	.74

Voluntary sector	I do voluntary or charity work for local not-for-profit groups	.04	.49	.70
activity	I join organising committees for voluntary or not-for-profit groups	.21	.87	.93
	I do casual unpaid voluntary work or I help out for free locally	.04	.58	.76
	If I'm in a group doing voluntary work or helping out for free, I take responsibility for getting things done	.01	.42	.65
	I regularly renew my membership with a voluntary or not-for-profit group	.04	.37	.61
	If I do voluntary work or help out for free, I take on jobs like secretary, coordinator or treasurer	.00	.61	.78
	When it comes to voluntary work or helping out for free I'm one of the leaders or organisers	.07	.65	.80

Table 3.11 (continued). Items retained in thirteen one-factor congeneric models of community participation, their domains, item weightings, item squared multiple correlation, and regression weights.

Domain of participation	Items retained in models	Item weighting	Squared multiple correlation	Standardised regression weight
Giving money to charity	I sign petitions if I agree with the cause	.06	.11	.32
	If I'm asked, I buy products sold by charities (eg, Blind Society Christmas cards)	.23	.48	.70
Active interest in current affairs	I give money to charity if I'm asked	.42	.66	.82
	I listen to the radio for news about national and international affairs	.10	.42	.65
	I read articles in magazines about current affairs all over Australia and overseas	.05	.32	.56
	I follow current affairs about my community on a local or commercial radio station	.03	.26	.51
	I watch national and international news and current affairs on television	.16	.51	.71
	I read articles in the paper about national and international affairs	.17	.56	.75
	I talk about current affairs with my friends or family	.18	.57	.75
	I watch current affairs of news programs about local events on TV	.03	.27	.52
	I have opinions on issues in current affairs or the news	.06	.28	.53
	Expressing opinions publicly	I write a letter to the newspaper or contact a radio station if I want to say what I think about current affairs	.14	.47
If necessary I talk to a local politician about issues in current affairs		.19	.57	.86
I write to local politicians to tell them what I think about things		.38	.75	.75

Table 3.11 (continued). Items retained in thirteen one-factor congeneric models of community participation, their domains, item weightings, item squared multiple correlation, and regression weights.

Domain of participation	Items retained in models	Item weighting	Squared multiple correlation	Standardised regression weight
Community activism	I contact other members of my current affairs group to remind them to come to meetings, pay their dues, etc	.15	.56	.75
	I encourage others to join a group involved in current affairs	.18	.62	.79
	I hand out leaflets for a group involved in current affairs	.13	.50	.71
	I go to meetings of a group involved in current affairs in my community	.10	.44	.67
	I arrange meetings, send out information or help with other administrative tasks for a group involved in current affairs	.13	.48	.69
	I get involved in organising a current affairs group	.14	.51	.71
	I join unions, political parties, or groups that are for or against something	.42	.66	.81
Political action	I go to meetings of a union, political party, or group that's for or against something	.22	.45	.67
	I go on demonstrations or marches	.16	.35	.59
	I do things like wear badges or display bumper stickers to do with issues in current affairs	.10	.20	.44

Given that all the variables in this study measure different aspects of participation, with some of the variables very highly correlated, and given that a correlated approach to extracting and rotating factors was used in the exploratory factor analysis that generated the hypothesised models, some cases of collinearity could be expected. It was therefore appropriate to covary error terms where the modification indices suggested it would help with fitting the model.

THE FINAL ONE-FACTOR CONGENERIC MODELLING SOLUTION: FOURTEEN DOMAINS OF COMMUNITY PARTICIPATION

In the final solution, fourteen domains of community participation were fitted. These were not exactly the same fourteen domains derived from the exploratory factor analysis, and the results of each model fitting are described below. Figures 3.3 and 3.4, the hypothesised and fitted models for “contact with household members”, are included as examples of all the hypothesised and fitted models. A full list of the final fourteen factors and their item structures has been presented in Table 3.11.

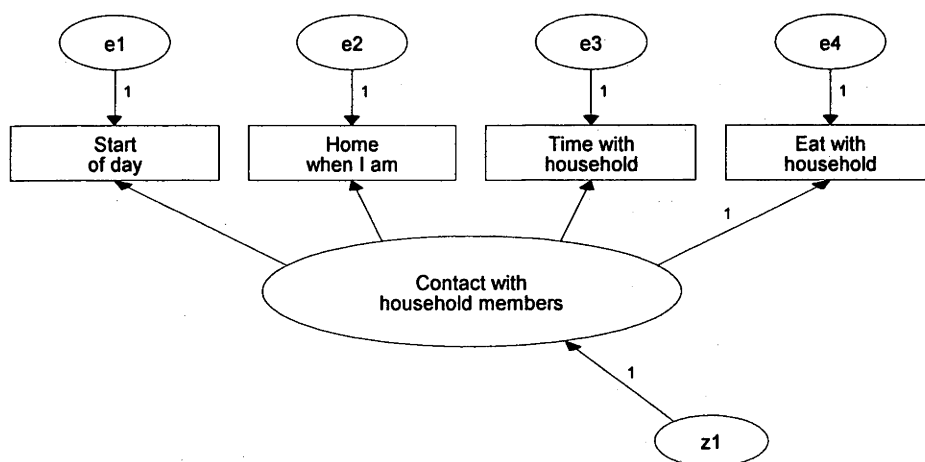


Figure 3.3. Hypothetical one-factor congeneric model of contact with household members.

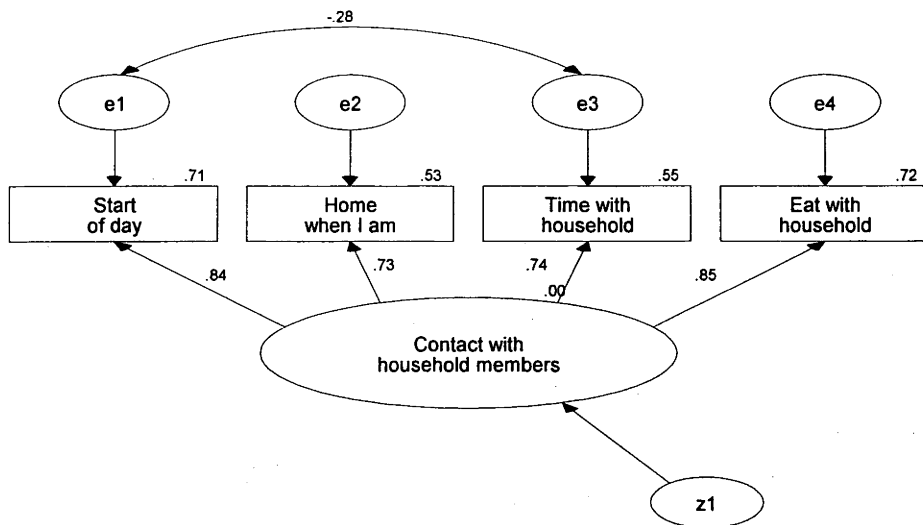


Figure 3.4. Fitted one-factor congeneric model of contact with household members.

Models that were fitted with little or no modification

Eight of the fourteen hypothesised models were fitted without modification or with minor modification, that is, with some of their error terms covaried. Those that required no modification at all included “contact with extended family”, “social contact with workmates” and “organised community activities”. Those requiring minor modification included “contact with household members”, “contact with friends”, “contact with neighbours”, “ongoing informal learning”, and “religious observance”.

Contact with household members

This model includes four items. Absolute fit indices, including the RMSEA, suggested that the hypothesised model did not fit the data well, though the incremental fit indices suggested the data did fit the model well. As the RMSEA is the most important fit index of all, and as the Chi-square statistic also suggested the model did not fit, modification was undertaken. Acceptable item regression weights, squared multiple correlations and factor weights indicated that it was not appropriate to delete any items.

The modification indices were therefore inspected. These indicated that two of the error terms could be covaried. This was done, following which the absolute fit indices showed that the model fit the data well. The parsimony index (the AIC) and the incremental fit indices also showed improved fit. These, together with strong item and scale reliabilities, indicated that this model fit the data well and a composite score for contact with household members could be confidently calculated. In the final model, the item with the largest weighting and that which best reflected the construct was “I see people in my immediate household at the start of my day”.

Contact with extended family

This model includes four items. All fit indices, together with strong item and scale reliabilities, suggested that the hypothesised model fit the data well and no modification was necessary. A composite score for contact with extended family could be confidently calculated. In the final model, the item with the largest weighting and that which best reflected the construct was “I see members of my extended family in person”.

Contact with friends

This model includes four items. Absolute fit indices, including the RMSEA, and incremental fit indices, including the TLI, suggested that the hypothesised model did not fit the data well. Modification was therefore undertaken. Acceptable item regression weights, squared multiple correlations and factor weights indicated that it was not appropriate to delete any items, so the modification indices were inspected. These indicated that two of the error terms could be covaried. This was done, following which the Chi-squared fit index showed that the model still did not quite fit the data. Nevertheless, the RMSEA, the parsimony index (the AIC) and the incremental fit indices all showed adequate fit. These, together with strong item and scale reliabilities, indicated that this model fit the data well and a composite score for contact with friends could be confidently calculated. In the final model, the item with the largest weighting and that which best reflected the construct was “I make time to keep in touch with my friends”.

Contact with neighbours

This model includes four items. Absolute fit indices, including the RMSEA, and several incremental fit indices, including the TLI, suggested that the hypothesised model did not fit the data well. Modification was therefore undertaken. Acceptable item regression weights, squared multiple correlations and factor weights indicated that it was not appropriate to delete any items, so the modification indices were inspected. These indicated that two of the error terms could be covaried. This was done, following which the Chi-squared fit index showed that the model still did not quite fit the data. Nevertheless, it came close, and the RMSEA, the parsimony index (the AIC) and all the incremental fit indices showed adequate fit. These, together with strong item and scale reliabilities, indicated that this model fit the data well and a composite score for contact with neighbours could be confidently calculated. In the final model, the item with the largest weighting and that which best reflected the construct was “my neighbours tell me their news or I tell them mine”.

Social contact with workmates

This model includes four items. The largest weighting absolute fit indices, the RMSEA and the RMR, and all the incremental fit indices, together with strong item and scale reliabilities, suggested that the hypothesised model fit the data well. While the model did not quite achieve a significant Chi-square value, this is not an important fit indicator with large samples, and no modification was considered necessary. A composite score for social contact with workmates could be confidently calculated. In the final model, the item with the largest weighting and that which best reflected the construct was “I socialise with my workmates before work, after work or during breaks”.

Ongoing informal learning

This model includes four items. All the absolute fit indices, including the RMSEA, and all the incremental fit indices suggested that the hypothesised model did not fit the data well. Modification was therefore undertaken. Acceptable item regression weights, squared multiple correlations and factor weights indicated that it was not appropriate to delete any items. The modification indices were therefore inspected. These indicated that two pairs of error terms could be covaried. This was done, one at

a time, following which the absolute and the incremental fit indices all showed that the model fit the data well. The parsimony index (the AIC) also showed improved fit.

However, item and scale reliabilities, were worsened by improving overall model fit. This indicated that, though this model as a whole now fit the data well, the items were not all valid indicators of the *same* construct. The factor was renamed “ongoing informal learning” to more accurately reflect the item structure of the fitted model. From the point of view of further research, this suggests that continuing formal education and ongoing informal learning among adults may not be the same concept, though the positive correlation between the error terms suggests they are related. Despite this, for the purposes of this study, a composite score for ongoing informal learning could be calculated because the item weightings for the weaker items were so small as to make a negligible difference to the end value. In the final model, the item with the largest weighting and that which best reflected the construct was “I go to courses or evening classes whenever I can”.

Religious observance

This model includes four items. Most of the absolute fit indices, including the RMSEA, and two of the incremental fit indices suggested that the hypothesised model did not fit the data well. Modification was therefore undertaken. Not all item regression weights, squared multiple correlations and factor weights were strong, indicating that it may be appropriate to delete items. However, deleting the weakest item saturated the model and prevented fitting, so the item was retained. As model modification was still required, the modification indices were inspected. These indicated that two error terms could be covaried. This was done, following which all the absolute and the incremental fit indices showed that the model fit the data well. The parsimony index (the AIC) also showed improved fit.

However, item and scale reliabilities were still not rendered adequate by improving overall model fit. This indicated that, though this model as a whole now fit the data well, the items were not all valid indicators of the *same* construct. The factor did not, however, require renaming and there were no implications for further research. For the purposes of this study, a composite score for religious observance could be calculated

because the item weightings for the weaker items would ensure they did not make a disproportionately large contribution to the end value. In the final model, the item with the largest weighting and that which best reflected the construct was “I make time to attend services at a place of worship”.

Organised community activities

This model includes four items. All fit indices, together with strong item and scale reliabilities, suggested that the hypothesised model fit the data well and no modification was necessary. A composite score for organised community activities could be confidently calculated. In the final model, the item with the largest weighting and that which best reflected the construct was “I take an active part in organised group activities (eg, choir, sport)”.

Models that were substantially modified

Models that were substantially modified included those from which items were deleted and a number of covariances were required. These included “active interest in current affairs” and “community activism”.

Active interest in current affairs

This model includes eight items. All the absolute and incremental fit indices suggested that the hypothesised model did not fit the data well. In addition, item regression weights, squared multiple correlations and factor weights indicated that it might be appropriate to delete one or two items. Modification was therefore undertaken. Deleting the weakest item improved the model fit, as did deleting the second weakest item. However, the model still did not fit the data well and further modification was required. The modification indices were therefore inspected. These indicated that several error terms could be covaried. All were tested, one by one, the model fitting better with each modification. Finally, with two items deleted and nine error terms covaried, all the absolute and the incremental fit indices showed that the model fit the data well. The parsimony index (the AIC) also showed greatly improved fit.

The factor did not require renaming as a result of these modifications and there were no implications for further research. With one minor exception, item and scale

reliabilities were also strong, indicating that this model as a whole now fit the data well and the items were valid indicators of the *same* construct. A composite score for active interest in current affairs could be confidently calculated. In the final model, the item with the largest weighting and that which best reflected the construct was “I talk about current affairs with my friends or family”.

Community activism

This model includes six items. All the absolute and incremental fit indices suggested that the hypothesised model did not fit the data well. In addition, item regression weights, squared multiple correlations and factor weights indicated that it might be appropriate to delete several items. Modification was therefore undertaken. The weakest item was deleted first and this improved the model fit. Further items were deleted one at a time, until five items had been deleted and model fit was greatly improved. However, the model still did not fit the data well and further modification was required. The modification indices were therefore inspected. These indicated that two pairs of error terms could be covaried. These were tested, one by one, and the model fitted better with each covariance added. Finally, with five items deleted and two error terms covaried, all the absolute and the incremental fit indices showed that the model fit the data well. The parsimony index (the AIC) also showed greatly improved fit.

Item and scale reliabilities were strong, indicating that this model as a whole now fit the data well and the items were valid indicators of the *same* construct. It was not necessary to rename the factor as a result of these modifications. A composite score for community activism could be confidently calculated. In the final model, the item with the largest weighting and that which best reflected the construct was “I encourage others to join a group involved in current affairs”.

A further comment is required with respect to the model “community activism”. That is that the items that were deleted happened to correspond exactly to a factor that emerged during the exploratory factor analyses. This factor was named “political action”. It only emerged in the two fifteen-factor solutions based on principal axis factoring, and did not appear to demonstrate strong factor stability. Of the two

solutions in which it appeared, it had five items loading principally on it in the oblimin rotation solution (four of which had substantial loadings), and none in the varimax solution (all its items were cross-loadings of items that loaded more strongly on other factors). For these reasons, “political action” was not included in the final factor solution. However, the five items from the oblimin solution were the same five items deleted from the “community activism” model. Further, it was noted during the exploratory factor analysis that the “political action” factor was meaningful and might be scientifically useful, possibly warranting further research. Given the results of the testing of the “community activism” model described above, it was decided to test the “political action” factor as a separate model. The results of this testing appear in the section which follows shortly, “two new models”.

Models that could not be fitted

The fit of two hypothesised models, “giving money to charity” and “expressing opinions publicly” could not be evaluated because they were saturated (three-item) models. However, item reliabilities, regression weights and squared multiple correlations were evaluated with regard to creating composite scores.

Giving money to charity

Out of three items, two of the item regression weights, squared multiple correlations and factor weights were strong, indicating that a composite score for voluntary sector activity could be calculated. The item with the largest weighting and that which best reflected the construct was “I give money to charity if I’m asked”.

Expressing opinions publicly

Item and scale reliabilities were strong for all three items, indicating that the items were valid indicators of the same construct. A composite score for expressing opinions publicly could be calculated. The item with the largest weighting and that which best reflected the construct was “I write to local politicians to tell them what I think about things”.

Two new models

Finally, the process of fitting the one-factor congeneric models for each of the hypothesised domains of participation led to the generation of two new factors, “voluntary sector activity” and “political action”.

Voluntary sector activity

As discussed above, two of the hypothesised models, “leadership in the voluntary sector” and “volunteering”, were combined to create one model. This is a seven-item model. Most of the absolute and incremental fit indices suggested that the hypothesised model did not fit the data well and modification was required. Item regression weights, squared multiple correlations and factor weights were all very strong, with the exception of one item. Though this item was not inadequate, it was not nearly as strong as the others and the model fit might therefore benefit from its deletion. With parsimony in mind, this was tried, and deleting the item did improve the model fit. As the model still did not fit the data well, further modification was required and the modification indices were inspected. These indicated that several error terms could be covaried. All were tested, one by one, the model fitting better with each modification. Finally, with one item deleted and nine error terms covaried, all the absolute and the incremental fit indices showed that the model fit the data well. The parsimony index (the AIC) also showed greatly improved fit.

Item and scale reliabilities were strong, lending further weight to the conclusion that the model as a whole now fit the data well. This also indicated that the items were valid indicators of the *same* construct. It was not necessary to rename the factor as a result of these modifications. A composite score for voluntary sector activity could be confidently calculated. In the final model, the item with the largest weighting and that which best reflected the construct was “I join organizing committees for voluntary or not-for-profit groups”.

A note is warranted with respect to the process of combining two hypothesised factors to create this model. The two leadership items that were included fit this new model well and had strong regression coefficients and item squared multiple correlations. However, with standardised item weightings of .00 and .09, the items contributed little

or nothing to final composite scores. Thus the concept of leadership, while clearly part of the construct, was not reflected in composite scores and could not be taken into account for the purposes of interpreting results of later analyses. The implications for further research of the loss of this concept have been noted.

Political action

This model includes four items. Most of the absolute and incremental fit indices suggested that the hypothesised model, which contained the five items deleted from the “community activism” model, did not fit the data well. Item regression weights, squared multiple correlations and factor weights indicated that it might be appropriate to delete one of the items. The item was therefore deleted. With this modification, all but one of the absolute fit indices, and all the incremental fit indices, showed that the model fit the data well. The parsimony index (the AIC) showed improved fit.

Three out of the remaining four item and scale reliabilities were strong, further indicating that this model as a whole fit the data well, and also suggesting that the items were valid indicators of the same construct. It was not necessary to rename the factor as a result of the deletion of one item and there were no implications for further research beyond those discussed in the section above on “community activism”. A composite score for political action could be calculated. In the final model, the item with the largest weighting and that which best reflected the construct was “I join unions, political parties, or groups that are for or against something”.

PRESENTING THE FITTED ONE-FACTOR CONGENERIC MODELS OF DOMAINS OF COMMUNITY PARTICIPATION

In all, the aims of this analysis were well met. That is, the process of one-factor congeneric modelling tested the fit between the data and the hypothesised factors suggested by the exploratory factor analysis, revealing subtle but important modifications that needed to be made to the hypothetical model. The analysis also tested and refined an optimal item structure for each of the confirmed domains of community participation, identifying valid items and weightings for the creation of composite scores. Finally, the input elements required for later confirmatory factor analysis were built, tested, and shown to be adequate.

In summary, based on a holistic judgment with respect to a range of solution evaluation criteria, fourteen meaningful and scientifically useful domains of community participation were confirmed through the analyses. The hypothetical model that was tested started with the fourteen factors suggested by the exploratory factor solution, to which two new factors were added for testing (“voluntary sector activity” and “political action”). Thus, in all, sixteen hypothetical one-factor congeneric models were tested. Of these sixteen models, three could not be fully tested because they were either unidentified or saturated.

Overall evaluation of model fit

Of the thirteen models that could be fully tested, eleven achieved a non-significant Chi-square statistic, indicating that the observed and reproduced matrices were not statistically different and, thus, that the models fitted the data well. This is an unusual result with such a large sample, because the Chi-square statistic is very sensitive to sample size. Three of the models fitted without modification. Model modification was undertaken for the remaining ten of the thirteen models that could be fitted. During this process, four items were deleted from the models entirely and a further six items were reassigned to other models. All models were simply and successfully fitted. In all thirteen fitted models, the absolute goodness-of-fit indices indicated that the models fit the data well, as did the incremental fit indices and the parsimony indices. Standard errors and critical ratios indicated that all retained parameter estimates were significant and were suitable for inclusion in the final models.

Item reliabilities, which were assessed by reference to the item squared multiple correlations, indicated acceptable item stability for all items in nine of the thirteen models. Indeed, only ten items in total from all the models taken together did not attain the $>.30$ cut-point, suggesting that the large majority of items within each model were reliable, and representative of the *same* construct. This means that the items could be combined to form composite scores that were valid measures of their corresponding domains of community participation. Composite score reliability was confirmed by computing Cronbach’s α reliability coefficients, which indicated

adequate reliability in all but one cases (see Table 3.8). At $\alpha=.64$, the coefficient for giving money to charity was slightly below the criterion of $\alpha>.70$.

The domains of community participation

The domains of community participation that were confirmed through the one-factor congeneric modelling can be described as follows. The two new domains, those that were not hypothesised as a result of the exploratory factor analysis, are reported in italics: contact with household members; contact with extended family; contact with friends; contact with neighbours; social contact with workmates; ongoing informal learning; religious observance; organised community activities; *voluntary sector activity*; giving money to charity; active interest in current affairs; expressing opinions publicly; community activism; and *political action*.

COMPARING THE HYPOTHESISED DOMAINS OF COMMUNITY PARTICIPATION WITH THE CONFIRMED MODELS

With respect to Hypothesis 1 set out in Chapter 1, the analyses reported in this chapter produced a fourteen-factor solution that was very similar to the sixteen-domain structure set out in the hypothesised model. Table 3.12 summarises the domains of participation proposed in the hypothesised model in Chapter 1, the domains suggested by the factor structure reported earlier in this chapter, and the domains confirmed by the one-factor congeneric modelling.

HOW OFTEN DO PEOPLE PARTICIPATE IN THEIR COMMUNITY IN EACH OF THE DIFFERENT WAYS?

Creating composite scores

Weightings derived from the one-factor congeneric modelling, as reported in Table 3.11, were used to calculate composite scores for each domain of community participation. These weightings are proportional, so can be multiplied or divided by the same number without changing their relative values to one another. For each domain, each item weighting was divided by the sum of the weightings for that domain. This meant that the new weightings would sum to one.

Table 3.12. Domains of community participation as proposed in two hypothetical models and one set of confirmed models.

Domain	Model			One-factor congeneric models	
	Original hypothetical model	Hypothetical domains based on exploratory analysis	Same items*		Domain
1. Contact with immediate household	✓	✓	Yes	✓	Yes
2. Contact with extended family	✓	✓	Yes	✓	Yes
3. Contact with friends	✓	✓	Yes	✓	Yes
4. Contact with neighbours	✓	✓	Yes	✓	Yes
5. Social contact with workmates	✓	✓	Yes	✓	Yes
6. Organised community activities	✓	✓	Yes	✓	Yes
7. Religious observance	✓	✓	Yes	✓	Yes
8. Education and learning	✓	✓	Yes	✓(Renamed)	Yes
9. Giving money	✓	✓	No	✓	Yes
10. Volunteering	✓	✓	No		
11. Leadership in the voluntary sector	✓	✓	No		
12. Voluntary sector activity				New domain	N/a
13. Interest in local affairs	✓				
14. Interest in inter/national affairs	✓				
15. Active interest in current affairs		New domain	N/a	✓	No
16. Expressing opinions	✓	✓(Renamed)	No	✓(Renamed)	Yes
17. Community activism	✓	✓	No	✓	No
18. Political action	✓	✓		✓	No

* same items as in previous hypothetical model.

The purpose of this was cosmetic, for reasons of presentation and ease of interpretation: when the weightings sum to one, the composite score derived by applying the weightings to the items returns to the original scale (in this case, 1 to 7).

DESCRIBING THE FREQUENCY OF COMMUNITY PARTICIPATION

Descriptive statistics were then derived for each domain of community participation. These are presented by sex and generation in Table 3.13. The distribution of scores on the domain “contact with immediate household” was, as expected, bimodal, reflecting the fact that some people live in households with other people while others live alone. Mean scores varied substantially between different domains of participation, indicating that some kinds of community participation are common, some less common and some rare. These results were consistent with the results of another recent Australian general population survey (Baum et al 2000).

Women and men

With regard for the frequency of participation in women compared with men (Hypothesis 11), and across the three generations, there were statistically significant differences in many cases. These are presented in bold typeface in Table 3.13 and discussed in further detail in Chapter 5. Women reported more frequent participation than did men in five domains, including contact with extended family and friends, ongoing informal learning, religious observance, and giving money to charity. While there were no significant differences in levels of participation in the other domains, there were interesting trends. While women tended towards more contact with household members and with neighbours, and towards more organised community activities and voluntary sector activity, men tended towards more social contact with workmates. Men also tended towards more active interest in current affairs, expressing opinions publicly, community activism, and political action. These trends would be worth following up in future studies, because they suggest not only different levels of participation between the sexes, but also different broad areas of participation.

Table 3.13. Mean scores (and standard deviations) for fourteen domains of community participation by sex and generation.

	Sex		Male	Generation			TOTAL
	Female	Male		Generation X	Baby Boomers	Long Civics	
1. Contact with immediate household	5.55	5.36	5.36	5.68	5.76	4.96	5.46
2. Contact with extended family	2.06	2.16	2.16	1.78	1.78	2.54	2.11
3. Contact with friends	4.22	3.80	3.80	4.08	3.89	4.11	4.02
4. Contact with neighbours	1.33	1.32	1.32	1.41	1.31	1.31	1.34
5. Social contact with workmates	4.60	4.12	4.12	4.46	4.20	4.89	4.37
6. Organised community activities	1.35	1.28	1.28	1.34	1.39	1.26	1.34
7. Giving money to charity	3.74	3.61	3.61	3.37	3.55	4.05	3.68
8. Voluntary sector activity	1.63	1.53	1.53	1.64	1.55	1.51	1.58
9. Ongoing informal learning	2.15	2.30	2.30	3.11	2.50	1.22	2.22
10. Religious observance	1.51	1.53	1.53	1.63	1.50	.66	1.52
11. Active interest in current affairs	3.40	3.21	3.21	3.14	3.35	3.40	3.31
12. Expressing opinions publicly	2.10	2.04	2.04	2.14	2.07	2.02	2.07
13. Community activism	4.59	4.29	4.29	4.34	4.39	4.58	4.44
14. Political action	1.31	1.30	1.30	1.37	1.26	1.32	1.31
	2.71	2.47	2.47	2.13	2.71	2.83	2.60
	1.79	1.73	1.73	1.46	1.77	1.90	1.76
	2.27	1.78	1.78	2.15	2.18	1.78	2.03
	1.36	1.14	1.14	1.33	1.32	1.16	1.28
	2.27	1.79	1.79	1.76	1.96	2.33	2.04
	1.73	1.39	1.39	1.76	1.55	1.77	1.59
	5.46	5.55	5.55	5.17	5.46	5.81	5.51
	1.22	1.09	1.09	1.19	1.24	.95	1.16
	1.79	1.82	1.82	1.52	1.90	1.91	1.80
	1.14	1.19	1.19	.91	1.19	1.27	1.16
	1.33	1.44	1.44	1.22	1.44	1.45	1.38
	.65	.84	.84	.48	.86	.77	.75
	1.65	1.75	1.75	1.56	1.90	1.58	1.70
	.95	1.07	1.07	.85	1.16	.90	1.01

Table 3.13. Mean scores (and standard deviations) for fourteen domains of community participation by sex and generation.

	Sex		Male	Generation		TOTAL
	Female	Male		Generation X	Baby Boomers	
1. Contact with immediate household	5.55	5.36	5.68	5.76	4.96	5.46
2. Contact with extended family	2.06	2.16	1.78	1.78	2.54	2.11
3. Contact with friends	4.22	3.80	4.08	3.89	4.11	4.02
4. Contact with neighbours	1.33	1.32	1.41	1.31	1.31	1.34
5. Social contact with workmates	4.60	4.12	4.46	4.20	4.89	4.37
6. Organised community activities	1.35	1.28	1.34	1.39	1.26	1.34
7. Giving money to charity	3.74	3.61	3.37	3.55	4.05	3.68
8. Voluntary sector activity	1.63	1.53	1.64	1.55	1.51	1.58
9. Ongoing informal learning	2.15	2.30	3.11	2.50	1.22	2.22
10. Religious observance	1.51	1.53	1.63	1.50	.66	1.52
11. Active interest in current affairs	3.40	3.21	3.14	3.35	3.40	3.31
12. Expressing opinions publicly	2.10	2.04	2.14	2.07	2.02	2.07
13. Community activism	4.59	4.29	4.34	4.39	4.58	4.44
14. Political action	1.31	1.30	1.37	1.26	1.32	1.31
	2.71	2.47	2.13	2.71	2.83	2.60
	1.79	1.73	1.46	1.77	1.90	1.76
	2.27	1.78	2.15	2.18	1.78	2.03
	1.36	1.14	1.33	1.32	1.16	1.28
	2.27	1.79	1.76	1.96	2.33	2.04
	1.73	1.39	1.76	1.55	1.77	1.59
	5.46	5.55	5.17	5.46	5.81	5.51
	1.22	1.09	1.19	1.24	.95	1.16
	1.79	1.82	1.52	1.90	1.91	1.80
	1.14	1.19	.91	1.19	1.27	1.16
	1.33	1.44	1.22	1.44	1.45	1.38
	.65	.84	.48	.86	.77	.75
	1.65	1.75	1.56	1.90	1.58	1.70
	.95	1.07	.85	1.16	.90	1.01

Note: Bold typeface indicates mean score for women vs men, or between generations, is statistically different from other means at $p < .004$.

Three generations

Overall, with regard to Hypothesis 12, older respondents reported more frequent participation than did younger generations. Compared with Baby Boomers and respondents from Generation X, members of the Long Civic Generation reported higher levels of social contact with neighbours, religious observance and taking an active interest in current affairs. They participated less than the younger generations in contact with household members, social contact with workmates and in ongoing informal learning. Of the three generations, Baby Boomer respondents reported the lowest frequency of contact with friends and the highest frequency of political action. They reported more social contact with workmates than Long Civic respondents, and less than Generation X. And Baby Boomers reported less active interest in current affairs than Long Civic respondents, and more than members of Generation X. Respondents from Generation X stood out for having the least frequent voluntary sector activity, active interest in current affairs, expressing opinions publicly, and community activism. They reported the highest levels of social contact with workmates.

Common and moderately common ways of participating in the community

Based on mean scores, the most frequently undertaken forms of community participation were, in order, taking an active interest in current affairs, having contact with household members and with friends, and giving money. These were followed by having contact with extended family and also with neighbours, and taking part in organised community activities. Of these common and moderately common forms of community participation, women reported significantly more contact with extended family and friends than did men. Long Civic Generation respondents reported significantly more active interest in current affairs and contact with neighbours than did the other generations, and less contact with household members. Baby Boomers reported the least frequent contact with friends, while members of Generation X reported the lowest rate of active interest in current affairs.

Less common ways of participating in the community

On average, respondents reported much less frequent involvement in voluntary sector activity, social contact with workmates, religious observance and ongoing informal learning. Of these less common forms of community participation, women reported significantly more frequent ongoing informal learning, religious observance and voluntary sector activity than did men. The Long Civic Generation reported significantly more religious observance than either of the other generations and significantly less social contact with workmates and ongoing informal learning. Members of Generation X had the highest levels of social contact with workmates and the lowest levels of voluntary sector activity of all the generations.

Rare forms of community participation

Expressing opinions publicly, community activism and political action were all rare forms of community participation. Of these rare forms of participation, men reported significantly higher levels of community activism than women. Baby Boomers reported the highest levels of political action of the three generations, while Generation X respondents reported significantly lower levels of expressing opinions publicly and community activism than the older generations.

CHAPTER 4: SUPER-STRUCTURES AND DYNAMICS OF COMMUNITY PARTICIPATION

CHAPTER SUMMARY

This chapter builds on the conclusion from the last chapter that volitional community participation is made up of fourteen distinct domains. The chapter begins with an investigation of whether the domains of community participation are related such that participation can be described in terms of higher order structures. A report of second-order exploratory factor analyses is presented, which shows that the domains of participation can be grouped into higher order "super-domains". From this, and from the analyses reported in the last chapter, two hypothetical models of the structure of participation are presented. Each is tested via two approaches to confirmatory factor modelling, and two models of community participation (one simple, one hierarchical) that fit the data well are described and evaluated. Following these analyses, a multidimensional scaling analysis is presented to test the hypothesis that domains of participation can be ordered from private to public. The chapter concludes with a summary of the structures and dynamics of participation.

IS COMMUNITY PARTICIPATION STRUCTURED OR DIMENSIONAL?

Following from the analyses presented in Chapter 3, it was proposed that volitional community participation is not a unitary phenomenon but is made up of a series of separate domains, each containing a variety of specific activities. Substantive and statistical argument has been presented to propose that community participation can be described as comprising fourteen separate domains of activity. These are fourteen different ways in which people can choose to participate in their community.

In Chapter 1, it was proposed that separate domains of community participation might themselves be grouped to reveal higher order domains of community participation (Hypothesis 3). That is, with fourteen different types of participation in which to engage, people are likely to choose among them, rather than spread their time evenly across them all. For those who participate in more than one way in their community, it is likely they select related types of activity, at least some of the time. For example, if people like to socialise with their friends, then maybe they also like to socialise with their neighbours or workmates. And maybe those who choose to express their opinions publicly are more likely to take political action than those for whom expressing opinions is a less frequent activity. This suggests a hypothesis that some types of participation might be somewhat similar in nature, while others might be quite different. If so, domains of participation would be able to be grouped into higher order categories together with other similar types of participation, in much the same way as the original 67 items were grouped. This would contribute to the value of this study because it would simplify the concept of community participation further and thus aid in its understanding.

Specifically, it has been proposed that the different domains of community participation will be able to be grouped into three higher order categories, or “super-domains”, including informal social connectedness, civic engagement and political participation. This proposition may be tested empirically by conducting a second-order exploratory factor analysis using the fourteen domains of community participation as the variables to be analysed.

It has also been hypothesised that community participation is dimensional, with domains of participation ordered on a continuum from the most private to the most public (Hypothesis 6). That is, it may be that some kinds of participation form part of people’s private lives, others part of their public lives, and still others somewhere in-between. The results of testing this hypothesis have been reported in the last third of this chapter.

AIMS OF THIS CHAPTER

The first step in describing volitional community participation was to identify the fourteen domains of participation that would become the building blocks for further analyses. An attempt to do this has been reported in the previous chapter. The main aim of the present chapter is to attempt to group and order the fourteen domains, to help explain the super-structures and dynamics of community participation. This chapter therefore focuses on evaluating the data collected for this study with respect to the super-structures and dynamics of community participation, as described in Hypothesis 3.

More specifically, the primary goals of this chapter are to evaluate Hypotheses 3, 4, and 5. There are three main methodological approaches to achieving these aims. Two apply to Hypotheses 3 and 4, and are forms of factor analysis. The third is called multi-dimensional scaling and applies to Hypothesis 5. As in Chapter 3, analyses were conducted and reported in the order required by the research questions. Thus, as a first step in the next stage of theory development, it was again appropriate to conduct an exploratory factor analysis first. The aim of this second-order exploratory factor analysis was to produce a statistically tested hypothetical model of community participation that would then be suitable for more specific and rigorous testing.

Once this had been completed, the next step could be taken. This was to conduct confirmatory factor analyses that, as has been noted, are suited to theory testing. Confirmatory factoring is another aspect of structural equation modelling, one that is often built on one-factor congeneric modelling, such as that reported in Chapter 3. Indeed, the first steps in building a full confirmatory model have already been taken during the process of evaluating the one-factor congeneric models derived from the first exploratory factor analysis.

The third step in the analyses required to address the research questions in this chapter was to conduct a multi-dimensional scaling analysis, a different kind of analysis, with different goals and techniques. It has been used in this study as an adjunct to other analyses, in an attempt to shed light on any relationships among domains that were not sufficiently explained by different approaches to factor analysing. Multi-dimensional scaling is discussed in more detail later in the chapter.

A further aim of this chapter is to determine whether it would be useful to generate composite scores for the super-domains of community participation for use in later analyses and to generate descriptive statistics. However, scale development was not an aim of this analysis, and so is not an aim of this chapter, and issues to do with scale development have not been directly addressed. Rather, the aim of the chapter is to shed further light on the structures and dynamics of community participation and, if possible, to describe the distributions of the higher-order structures of different kinds of participation within the community.

We thus begin with an exploratory factor analysis. This is followed by the development of two confirmatory factor model of community participation, based on the factor structures suggested by the first- and second-order exploratory factor analyses. The chapter concludes with a report on the results of a multi-dimensional scaling analysis.

GROUPING THE DOMAINS OF COMMUNITY PARTICIPATION: A SECOND-ORDER EXPLORATORY FACTOR ANALYSIS

Exploratory factor analysis: a brief reminder

As discussed in Chapter 3, exploratory factor analysis is a set of statistical techniques used for data simplification. Used appropriately, it identifies a minimum number of factors underlying a set of variables when the underlying structure is not already known and cannot be directly measured. Its use is appropriate in theory development, particularly when there is reason to investigate whether a construct is a unitary phenomenon.

Aims of the second-order exploratory factor analysis

The aims of the exploratory factor analysis in this chapter were to make a preliminary evaluation of the hypothesised model of the super-domains of participation as shown in Figure 1.1, to generate a statistically substantiated hypothesised factor structure for confirmatory factor modelling, and to evaluate whether it would be useful to generate composite super-domain scores for descriptive purposes and for use in later analyses.

Assumptions, data preparation, approaches and evaluation criteria

In Chapter 3, a detailed description was presented of the assumptions of exploratory factor analysis, requirements for the preparation of the data set and issues to do with the selection of appropriate approaches to extracting and rotating factors. Only a very brief review, therefore, is presented here, together with relevant commentary and statistics.

Assumptions

As has been discussed in Chapter 3, this study has been properly conceptually and methodologically designed to be suitable for exploratory factor analysis. In addition, the original data were intuitively related and so too, therefore, are the fourteen domains of participation that were the input data for the second-order factor analysis. However, it cannot be assumed that because the original data set was factorable that the fourteen domains of community participation also formed a factorable data set. It was therefore necessary to inspect the bivariate intercorrelation matrix. This is presented in Table 4.1. As Table 4.1 shows, most of the domains were significantly statistically associated with one another, with many correlations greater than .30. The fourteen domains of participation therefore form a factorable data set. It should be noted, however, that two of the domains, “contact with immediate household” and “social contact with workmates”, produced few significant bivariate intercorrelations with the other domains, and none greater than .30. These were likely to be outlying items in the factor solution, that is, domains of participation that would not fit the final model and thus whose place in the concept of community participation would have to be accounted for in some other way.

Table 4.1. Intercorrelations between fourteen domains of community participation.

Domain of participation	Spearman's r													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Household members	-	.09*	-.03	.08*	.00	-.01	.02	-.04	-.05	-.01	.08*	.04	-.05	-.05
2. Extended family		-	.31**	.14**	.07*	.11**	.24**	.06*	.09*	.14**	.10*	.03	.07*	.03
3. Friends			-	.36**	.10*	.24**	.26**	.27**	.24**	.24**	.21**	.11**	.17**	.12**
4. Neighbours				-	-.10*	.10*	.18**	.14**	.16**	.20**	.23**	.13**	.15**	.11**
5. Workmates					-	.21**	.02	.09*	.03	.06	-.08*	.03	.07*	.19**
6. Ongoing informal learning						-	.29**	.36**	.38**	.14**	.08*	.23**	.27**	.27**
7. Religious observance							-	.28**	.29**	.20**	.07*	.15**	.23**	.13**
8. Organized community activities								-	.46**	.19**	.10*	.13**	.24**	.21**
9. Voluntary sector activity									-	.30**	.10*	.36**	.46**	.34**
10. Giving money to charity										-	.28**	.13**	.16**	.19**
11. Interest in current affairs											-	.27**	.20**	.23**
12. Expressing opinions publicly												-	.56**	.49**
13. Community activism													-	.55**
14. Political action														-

* significant at $p < .01$.

** significant at $p < .001$

Adequate sampling was again essential. From the perspective of sample size, with about ten cases per variable being sufficient, a sample size of around 140 would suffice and the present sample size of $N=963$ was adequate. Further, Bartlett's test of sphericity ($p<.000$) and the Kaiser-Meyer-Olkin statistic ($KMO=.75$), both indicated adequate sampling.

Preparing the data for the analysis

Again, as expected, most variable distributions were skewed and "contact with immediate household" was bimodal. As exploratory factor analysis is robust to violations of normality, transformations were not performed on the variables for this analysis. However, as was described in Chapter 3, factor analysis is very sensitive to outliers. As noted above, inspection of the bivariate intercorrelations matrix indicated that there were possibly two outlying variables in this data set. That is, there were two domains of participation that were not significantly and substantially intercorrelated with at least some of the other domains. However, as they were theoretically important, they were retained in the data set. Univariate and multivariate outlying cases were addressed in the original data screening and there was no need to address this issue again.

Selecting an appropriate approach to generating a factor solution

It was appropriate, for the same reasons as were set out in Chapter 3, to compare different approaches to extracting and rotating solutions with these data. The same four combinations of approaches were compared: principal axis factoring and maximum likelihood factoring each in combination with varimax and oblimin rotations.

In this analysis, the maximum likelihood approach to factor extraction was again theoretically preferable because it is designed to be robust to non-normality in the data and generates correlated solutions. The issue of which rotation to choose arose again, for the same reasons as before. Briefly, an orthogonal solution may be required for further planned analyses, such as multiple regression analyses and exploring

differences in patterns of participation among sub-groups of the sample population. However a correlated solution was theoretically more appropriate and, in any case, composite scores would be based on the results of the confirmatory rather than the exploratory factor analysis.

Criteria for comparing the adequacy of different factor solutions

The criteria used to ascertain the most acceptable exploratory factor solution in Chapter 3 were again appropriate. The three most important criteria remained meaningfulness and interpretability (generating factors that made sense and were scientifically useful), parsimony (generating the smallest number of stable factors that would fit the data), and the proportion of non-redundant residuals. Meeting the criterion of parsimony involved, as before, determining the number of factors to extract. The most important guiding criterion was, again, an assessment of the adequacy of each factor. Other criteria used to determine factor adequacy remained selecting factors with eigenvalues greater than one and Cattell's scree test.

Factor adequacy was assessed as before, with theoretical considerations (such as whether the factor was scientifically useful) the most important criteria in deciding whether a factor was adequate. Beyond that, factors and item structures that were common to several solutions were preferred because they were likely to be stable. The number of items loading on a factor was also assessed, as was the internal consistency (statistical validity) of the factor, assessed by inspecting the squared multiple correlations of the factor scores. Large squared multiple correlations ($r > .70$) indicated stable factors. Factors that had items loading strongly on them were again preferred because they were more likely to be stable than those with low-loading items (a cut-off of $> .45$ was again applied). Finally, factors that appeared with only with one approach to extraction or rotation would be considered potentially unstable because of the risk that they were an artefact of a particular statistical method.

In addition to an assessment of parsimony (which included an assessment of factor adequacy), meaningfulness and scientific value, and non-redundant residuals, four secondary criteria again guided the evaluation of factor solutions. These included eigenvalues, total variance in the original variables explained by the selected factors

taken together, the number and magnitude of cross-loadings, and the magnitude of factor loadings on all factors, particularly on potentially unstable factors.

AN OVERVIEW OF THE EXPLORATORY FACTOR SOLUTIONS OBTAINED

To recapitulate, four approaches to extracting and rotating factors were used: principal axis factoring and maximum likelihood estimation, each with varimax and oblimin rotations. The number of factors to extract was initially determined based on substantive and statistical criteria. From the point of view of substantive criteria, as the hypothesised structure of community participation contained three factors, or “super-domains”, it was appropriate to test a solution in which three factors were extracted. Further, a preliminary principal components analysis revealed that four factors had eigenvalues greater than one, while inspection of the scree plot indicated that three or four factors could be extracted. Thus, guided by the hypothetical structure, the eigenvalue-greater-than-one rule and the scree plot, it was appropriate to evaluate a set of three- and four-factor solutions. Therefore, in total, eight analyses were performed. Table 4.2 summarises the evaluation criteria for these eight approaches.

Consistency with the most important criteria

Both sets of solutions were, for the reasons set out above, broadly consistent with the criterion of parsimony. That is, they summarised the data and produced an acceptable number of factors. With respect to the criterion of producing meaningful and scientifically useful factors, all three-factor solutions were acceptable. In each case, the three factors reflected the super-domains expected. That is, for all solutions, the factors could be named “informal social connectedness”, “civic engagement” and “political participation”. Within that, three of the three-factor solutions produced identical item structures. That is, in three of the solutions, the same items loaded on the same factors in every case. The fourth was very similar.

Table 4.2. Summary table comparing two types of factoring and two types of rotation for an exploratory factor analysis of 14 domains of tapping community participation: three and four factors extracted.

Rotation	Principal Axis Factoring		Maximum Likelihood Factoring	
	Varimax	Oblimin	Varimax	Oblimin
THREE FACTORS EXTRACTED				
Factor adequacy	0	0	0	0
Factors with < 3 variables	7/14 (50%)	8/14 (57%)	6/14 (43%)	6/14 (43%)
Proportion loadings > .50	0 (3)	0 (1)	0 (2)	0 (0)
Cross-loadings > .45 (> .32)	.57-.77*	N/a	.56-.78*	N/a
Squared multiple correlations	Good	Good	Good	Good
Meaningfulness/interpretability	19 (20%)	19 (20%)	17 (18%)	17 (18%)
Non-redundant residuals	43.42	N/a	43.42	N/a
Variance explained	1.27-3.20	1.27-3.20	1.27-3.20	1.27-3.20
Eigenvalue range				
FOUR FACTORS EXTRACTED				
Factor adequacy	1	1	1	1
Factors with < 3 variables	8/14 (57%)	8/14 (57%)	8/14 (57%)	8/14 (57%)
Proportion loadings > .50	0 (1)	0 (0)	0 (0)	0 (0)
Cross-loadings > .45 (> .32)	.54-.77*	N/a	.58-.78*	N/a
Squared multiple correlations	Good	Good	Good	Good
Meaningfulness/interpretability	6 (6%)	6 (6%)	8 (8%)	8 (8%)
Non-redundant residuals	51.82%	N/a	51.82%	N/a
Variance explained	1.18-3.20	1.18-3.20	1.18-3.20	1.18-3.20
Eigenvalue range				

* Only one item had a squared multiple correlation above the acceptable threshold of > .70

All four-factor solutions produced identical factor and item structures. Like the three-factor solutions, all the factors were meaningful and scientifically useful. Again, three of the factors reflected the hypothesised super-domains, also suggesting factor structure stability. The fourth factor was a one-item factor containing the domain “social contact with workmates”. This item loaded heavily on its factor, at around .70 in each solution, and not on other factors. One other item, “contact with immediate household”, loaded on this factor and not on any other factor. However, with a loading of around .12 in each solution, the factor loading was so weak as to be negligible, indicating that the item was not representative of the factor and nor was it well explained by the factor. This was thus an unreliable factor and is discussed further in the next section.

With respect to the last of the most important criteria, all three-factor solutions generated a large proportion of non-redundant residuals (between 18% and 20%), indicating that the solutions did not fit the data adequately. The three-factor solutions were rejected on this basis. The four-factor solutions fit the data much better. With between 6% and 8% of non-redundant residuals, they were broadly acceptable.

It could thus be concluded that, in terms of parsimony and data fit, it was acceptable to extract four factors from these data. The factors were also meaningful and scientifically useful, consistent with the hypotheses, and the unstable factor threw up an interesting substantive issue for later consideration. Further, none of the solutions had any cross-loading items with loadings of greater than .45, and there were no more than three cross-loadings greater than .32 in any solution. The structure could therefore be described as simple. This was not a criterion for acceptability of the solution, since scale development was not a goal of this study, but is nevertheless a sign of a clear-cut and stable solution.

Issues with respect to secondary criteria

However, factor stability was not strong. Only around half of the items loaded substantially on their factors (loadings $>.50$). Further, squared multiple correlations were within the range of .56 to .78, with only one factor achieving a value greater than

the criterion threshold of $>.70$ in each solution. This suggests that the items were not strongly representative of their factors. The solutions using varimax rotations explained only 43% of variance, also not within the acceptable range.

These weaknesses are not a severe problem for three reasons. One is that item reliability is not among the most important criteria for evaluating a factor solution. Secondly, the goal of this study was to explore the relationships among observed and unobserved variables, not to develop scales. Thirdly, this exploratory analysis was intended only as a way of producing a substantively and statistically valid hypothetical structure of participation for further testing using more rigorous methods. It was not the end point of analysis, therefore, but a stepping-stone to further analyses. So, while some items in the factor structure may not be strongly representative of their factors, they are clearly associated with their factors and not with other factors, the basic structure of which appeared to be basically sound.

In sum, consideration of the more important criteria suggests that this factor structure was acceptable. While some of the minor criteria were not met, this was not sufficient to reject the four-factor solution overall. But before moving on to the further testing referred to above, a short discussion of the unstable factor is warranted.

One unstable factor: workmates and household members

The fourth factor extracted did not fit with the hypothesised super-domains of community participation, and nor was it statistically stable. It had only one item with a substantial loading, had an eigenvalue of only 1.18, and had a squared multiple correlation in the range of .54-.58 across solutions, well below the acceptable threshold. However, the factor was common to all solutions, did not cross-load, and did not correlate with other items, suggesting it was indicative of a separate underlying construct.

Workmates are not friends

This was interesting for two reasons. Firstly, the domain of participation loading on the factor in question was “social contact with workmates”. It was hypothesised in Chapter 1 that social contact with workmates would be part of informal social

connectedness, together with contact with friends, neighbours and extended family members (Figure 1.1). But, while bivariate correlations of between .07 and -.10 showed statistically significant associations between socializing with workmates and other informal social contacts, these were trivial (Table 4.1). In other words, to all intents, respondents who reported socializing with their workmates were no more or less likely to have other informal social contacts than those who did not socialise with workmates. This suggests that, in this sample, socializing with workmates was not a form of informal social contact, but may have had some other role or meaning within the wider concept of community participation.

Households are not the cornerstone of community participation

Secondly, contact with household members did not load substantially on any factor and nor did it have a factor of its own. This suggested that, even more than social contact with workmates, this form of community participation had some other meaning to the respondents in this sample, or some other function in their lives. Indeed, bivariate correlations showed that contact with household members was statistically associated with only three other domains of community participation, and those to a trivial degree (Table 4.1). These were contact with extended family, contact with neighbours and taking an active interest in current affairs. Further, insofar as contact with household members loaded on any factor, it loaded only on the social contact with workmates factor, and not on “informal social connectedness”, as was hypothesised. This raises an interesting issue of the role of families in community participation because, for most people, their immediate household is their immediate family.

FOUR SUPER-DOMAINS OF COMMUNITY PARTICIPATION

Overall, the aims of this exploratory factor analysis were met. That is, the analysis enabled a preliminary evaluation of the hypothesised model of super-domains of participation and generated a statistically substantiated hypothesised factor structure for confirmatory factor testing. The analysis also demonstrated that, while it may possibly be useful to generate composite super-domain scores for descriptive purposes, the factors did not demonstrate strong internal consistency and the items were not all sound indicators of their factors. It would therefore be unlikely that the items would

combine to deliver reliable scale scores for use in later analyses. However, this last point was a matter for further testing.

Summary of results

As all of the four-factor solutions had identical factor and item structures, it was not necessary to select among them. The same hypothetical model for confirmatory factor testing could be built from any one of them. An argument supporting a choice of a final solution is therefore not presented here. For the sake of completeness of reporting, however, a factor structure, items and loadings are presented in Table 4.3. The loadings reported are those derived from the solution using Maximum Likelihood factoring with oblimin rotation, because this is the most theoretically appropriate.

Table 4.3. Super-domains, domains of community participation and factor loadings of domains on super-domains: Maximum Likelihood Extraction with Oblimin rotation.

Super-domains	Domains	Factor loading
Informal social connectedness	Contact with friends	.57
	Social contact with neighbours	.56
	Active interest in current affairs	.40
	Contact with extended family	.34
	Giving money to charity	.28
Civic engagement	Voluntary sector activity	.70
	Organized community activities	.58
	Ongoing informal learning	.36
	Religious observance	.31
Political participation	Community activism	.76
	Political action	.72
	Expressing opinions publicly	.69
Workmates and household	Social contact with workmates	.72
	Contact with immediate household	.12

In this solution, four factors were extracted. The solution generated 8% non-redundant residuals indicating that reproduced correlations were reasonably faithful to the obtained values and offered an acceptable factor structure. Variance explained by each factor and total variance explained by all factors together could not be reported because, in correlated solutions, sums of squared loadings cannot be added. The solution achieved simple structure with no cross-loadings of .32 or greater. A minority

of factor loadings on all factors (43%) were .50 or higher. The four factors, or super-domains of community participation, can be named: informal social connectedness; civic engagement; political participation; and social contact with workmates. In sum, while the factor solution was not strong in all respects, it was acceptable, and suitable for using as the basis of building a confirmatory model.

Relationships among super-domains of community participation

Before leaving the exploratory factor analysis, one further analysis was required. This was to make a preliminary evaluation of the hypothesis that there may be relationships among the higher order elements of community participation (Hypothesis 4). That is, it was hypothesised that people who reported being involved in one broad area of community participation would be more likely than non-participants to be involved in other areas. If this were so, then the factors, or super-domains of community participation, would be positively inter-correlated. Bivariate correlations between the four factors are reported in Table 4.4.

Table 4.4. Bivariate intercorrelations between four super-domains of community participation.

Super-domain of participation	Spearman's r			
	1	2	3	4
1. Informal social connectedness	—	.51***	.29***	.12***
2. Civic engagement		—	.38***	.11***
3. Political participation			—	-.10**
4. Social contact with workmates				—

** significant at p<.01

*** significant at p<.001

As Table 4.4 shows, all super-domains of community participation were significantly associated with one another, some substantially so. The results were therefore broadly consistent with the hypothesis. That is, in general, those who participate more in one super-domain of community participation are more likely than less frequent participants to also participate in another super-domain of community participation. However, the correlation coefficient between political participation and social contact

with workmates was negative, suggesting that the more political participation respondents reported, the less social contact with workmates. Detailed commentary on these results was not warranted, however, pending confirmation of the factor structure.

TESTING THE HYPOTHESISED FACTOR STRUCTURE OF COMMUNITY PARTICIPATION: A CONFIRMATORY FACTOR ANALYSIS

We turn now to testing the higher-order factor structure of community participation, as suggested by the second-order factor analysis described above. This involved two approaches to building a confirmatory factor model of volitional community participation.

Aims of the confirmatory factor analysis

Overall, there were five aims of the confirmatory factor analyses in this chapter. The first of these was to evaluate whether all fourteen domains of community participation were valid indicators of that construct and, as such, part of the *same* overarching concept. To expand, it has been demonstrated that volitional community participation is not a *unitary construct*, but that it contains fourteen empirically and conceptually discrete elements (the domains). However, while it may not be a unitary concept, volitional community participation may nevertheless be, at the highest level, a *single concept*. That is, all fourteen domains, or a sub-set of them may be part of the same higher order latent factor. This has not yet been tested, and this is what was intended within the first aim of the confirmatory factor analyses.

A second aim was to address the hypothesis that the separate domains of community participation could be grouped to reveal a second-order, or hierarchical structure of participation, as suggested by the second-order exploratory factor analysis. A third aim was to explore the validity of creating composite variables for the super-domains of community participation. The purposes of this, and two further aims of this analysis, were (four) to explore any associations between the super-domains of participation (Hypothesis 4), and (five) to report on the distributions of activity within the super-domains of volitional community participation.

Overview of statistical methods

In Chapter 3, a review of the purposes and methods of one-factor congeneric modelling was presented. Confirmatory factor analysis, another one of the set of techniques that form part of structural equation modelling, is an extension of one-factor congeneric modelling. The material that was presented with respect to one-factor congeneric modelling is therefore relevant, and only a brief review will be presented here, together with some new material relevant to confirmatory modelling.

Confirmatory factor analysis is most appropriately used when a hypothetical structure of a complex concept has received preliminary evaluation and more precise and rigorous testing is required. Like exploratory factor analysis, confirmatory factor analysis is based on patterns of associations among a set of intuitively related variables. As for one-factor congeneric modelling, the associations among latent and observed variables are represented diagrammatically.

Conceptualising confirmatory models: different approaches to suit different research questions

Confirmatory models are usually (though not always) more complex than one-factor congeneric models, and may contain several of these basic measurement models.

Arrows depicting causal relationships among the latent constructs work on the same principle as for the simple one-factor congeneric models. That is, the highest order latent construct is assumed to “give rise to”, or “cause”, the lower order latent constructs, which in turn give rise to observed variables. This is called a “nested design” and reflects a hierarchical structure to a concept.

Nested designs

When analysing a complex construct and a large number of variables, a “two-step” approach to confirmatory factor modelling is generally accepted as advisable (Anderson & Gerbing 1988). The nested design is a common result of this approach. That is, the basic measurement models are built, tested and refined one-by-one first, and the structural relationships among latent variables modeled as a second and separate step.

Because composite scores can be computed for each latent variable in the basic measurement models, the two-step approach has the additional advantage of making manageable models based on large volumes of observed variables that could otherwise easily become unwieldy. This was the case in this study. This approach does have one disadvantage, however, which is that covariances between elements of different composites cannot be modeled. But all in all, it is a sensible and workable approach.

In the present model, the latent construct “volitional community participation” was the highest order latent variable. Leaving to one side for now the issue of the two domains that did not appear to fit within the factor structure, as suggested by the exploratory analysis, community participation could be said to “give rise” to three lower order latent variables. These were “informal social connectedness”, “civic engagement” and “political participation”. These in turn gave rise to even lower order latent constructs, such as “contact with friends”, “religious observance” and “political action”. Finally, these lowest order constructs gave rise to specific behaviours or activities (the observed variables in the data set). Using the two-step methodology, the raw data had already been summarised via one-factor congeneric modelling as composite scores. Thus the composite scores for the lowest order latent constructs, the fourteen domains of community participation, became the new observed variables in the larger, more complex model.

In this study, this approach to confirmatory model design was appropriate for addressing the hypothesis that the separate domains of community participation could be grouped to reveal a higher-order structure of participation, as suggested by the second-order exploratory factor analysis. This nested, or hierarchical model of community participation is presented in Figure 4.1.

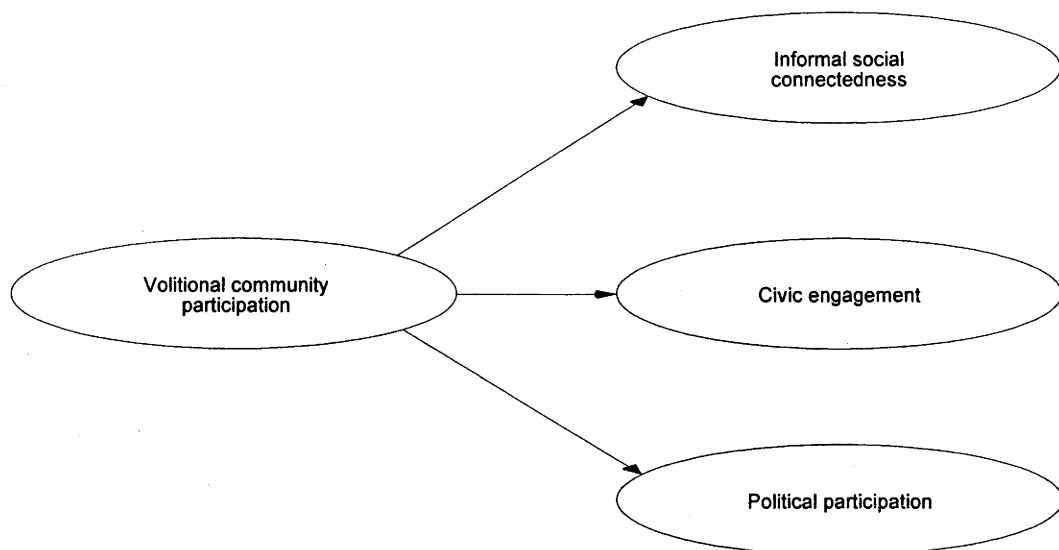


Figure 4.1. Basic hypothetical nested, or hierarchical model of volitional community participation as proposed in Hypothesis 3 in Chapter 1.

Simple designs

Alternatively, it is possible to use composite scores for latent constructs derived from the one-factor congeneric models as observed variables in a confirmatory model, as if the confirmatory factor model were itself a simple one-factor congeneric model. This approach is presented in Figure 4.2. In this case, the composite scores, which are now the observed variables, each load separately and directly on a single new latent construct, “volitional community participation”. This methodology is appropriate for addressing the question of whether all fourteen domains of community participation were part of the same concept, the first of the aims of this analysis. In this study, this question was particularly interesting with respect to the status of the two domains that did not fit the factor structure suggested by the exploratory analysis, “social contact with workmates” and “contact with household members”. As the solution to this simple, one-factor congeneric approach to developing a confirmatory model would have a bearing on the way in which the nested model was constructed and refined, this analysis was performed first.

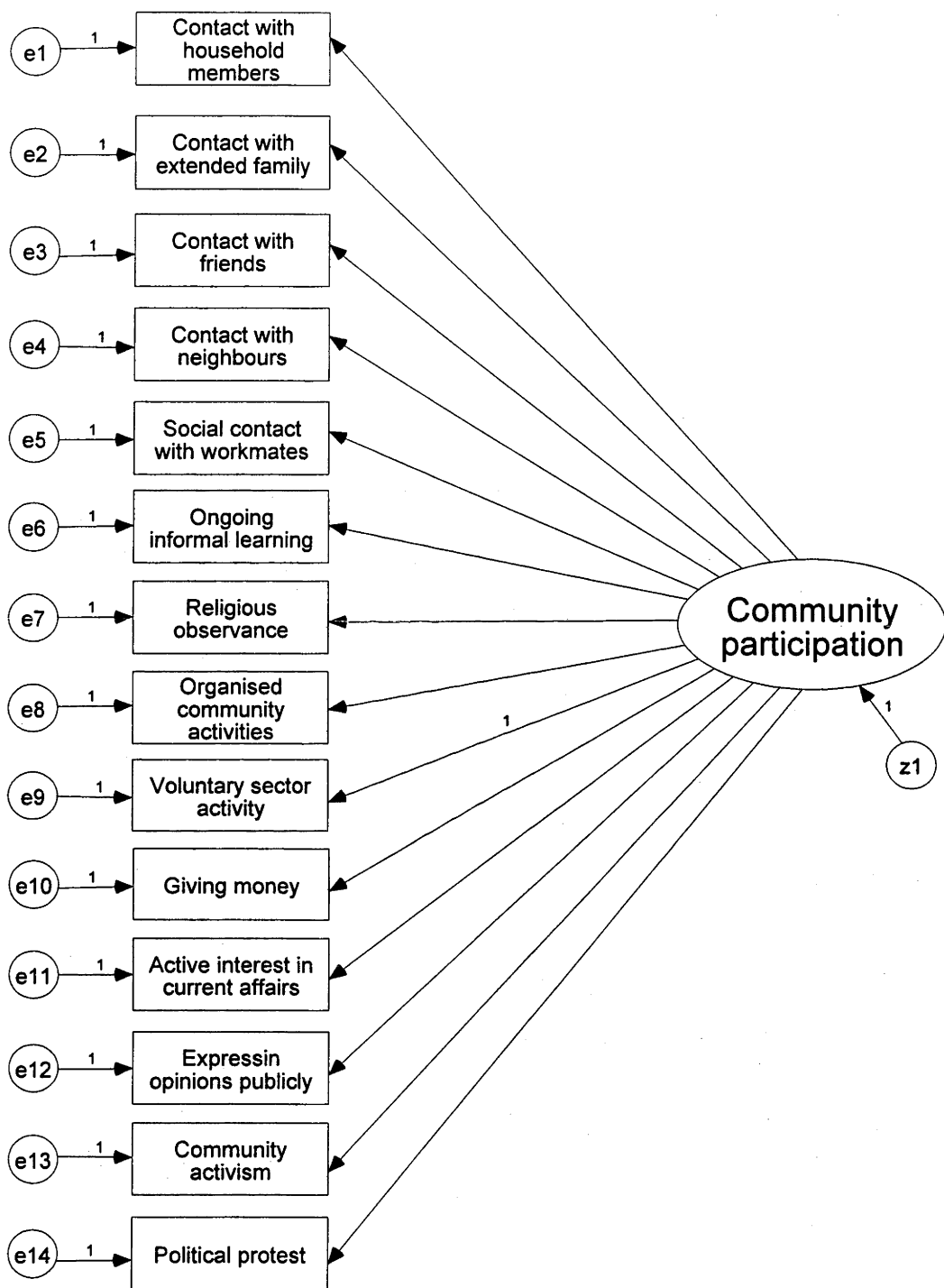


Figure 4.2. Hypothetical one-factor congeneric model of volitional community participation including fourteen domains of participation, based on first-order exploratory factor analysis.

Assumptions: sample size and normality of distribution

Sample size

As we have seen, structural equation modelling, including confirmatory factor analysis, requires large sample sizes. For the simple confirmatory model described above, there were 14 observed variables, each with its own error term. Thus, in total, there were 28 parameters to be estimated. Applying the rough guide that ten cases are required per parameter to generate reliable estimates, a sample size of around 280 cases was required. In terms of this guide the sample size in this study of N=963 was easily adequate. For the nested design, additional parameters were estimated for the three intermediate level latent constructs, again each with their own error terms, making 34 parameters to be estimated in total. This would require a sample size of around 340, and the present sample remained easily adequate.

Again, sample size requirements were complicated by non-normality in the distribution of observed variables. The distribution of the composite variables derived from this data set was, like the raw data, skewed. The probability of rejecting an acceptable hypothesised structure was thus inflated and an asymptotic distribution free (ADF) estimation procedure that does not assume normality of distribution was again selected. As was explained in Chapter 3, the sample size in this study was adequate not just for modelling parameters for the whole sample, but also for the sub-groups of respondents including women, men and three generations.

Bimodal data

Again, it should be noted that it is not possible to include in structural equation models variables with bimodal distributions. The distribution of one of the domains of community participation, “contact with household members”, was bimodal, largely reflecting the fact that some respondents lived alone while some lived with other people. It was therefore appropriate to create a dichotomous nominal variable by mean split for this domain such that respondents were allocated a score of 0 (“no contact with household members”) or 1 (“contact with household members”).

Criteria for evaluating the models

As with one-factor congeneric models, a confirmatory model is said to fit the data based on a holistic judgment with respect to a selection of criteria. As these were the same as those described in Chapter 3, only a brief summary is provided here. The first evaluated was the Chi-square statistic indicating whether the reproduced covariance matrix is statistically different from the observed matrix. Chi-square should be *non-significant*, that is, the matrices are the same. Again, this was the least important fit statistic because it is very sensitive to sample size. Nevertheless, a Chi-square value of $p > .05$ was desirable. The second criterion was again the standard error of the estimate, which should be less than half the parameter estimate. A third criterion was the *t*-statistic, or critical ratio, that also indicates the significance of a parameter estimate (the *t*-statistic should be greater than plus or minus two).

Fit indices

Fourth, goodness-of-fit indices were again evaluated. As before, these were the most important and comprehensive statistical indicators of model adequacy. Again, absolute and incremental fit indices, together with an index of model parsimony were used.

Fifth, item reliabilities were examined in terms of the squared multiple correlation of the item. Again, as all items were theoretically acceptable, item reliability thresholds were set at greater than .30 rather than the more conservative level of .50. Finally, maximised scale reliabilities (squared multiple correlations for the factors) were examined and evaluated together with the more conservative Cronbach's α reliability. These indicate the internal consistency of the composite scales. Though scale development was not a goal of this analysis, high reliability values were desirable because they indicated that the composite was an accurate measure of true scores, which was relevant to generating reliable descriptive statistics.

Modifying the models

Just like one-factor congeneric models, confirmatory models that do not fit the data may be modified. The three main statistical indicators for model modification remained: fit indices showed, on balance, that the model did not fit the data well; modification indices suggested a different model would fit the data better; and there

were non-significant paths in the model. Consistent with the assumptions of the parsimony fit criteria, the first step in model modification was again to consider removing non-significant paths (those with a critical ratio of less than two). Modification indices were then inspected to identify whether any parameter changes would improve the model fit. Parameters were again modified one at a time, and only when it made substantive sense to do so.

A particular goal of the confirmatory modelling was to identify items that reduced the construct validity of the measurement model. Indicators of these “outlying items” were, as before, low regression weights, squared multiple correlations of less than .30, low factor weights or several covariances on a particular error term, indicating the likelihood of collinearity with another variable. However, it should be noted that there was no a priori intention to delete these items from the model, rather to use the process of fitting the model as a way of singling out outlying items for theoretical comment and further statistical analysis.

A SECOND-ORDER ONE-FACTOR CONGENERIC MODEL OF COMMUNITY PARTICIPATION

A one-factor congeneric model of community participation was constructed for this study, using the domains suggested by the exploratory factor analysis (see Figure 3.4) and using the composite domain scores derived from the one-factor congeneric models as the observed variables. As is conventional, a regression weight of 1 was assigned to one parameter. With fourteen observed variables loading on one latent factor, this model was neither unidentified nor saturated, and fitting could proceed.

Fitting the one-factor model of community participation

Table 4.5 details the fit statistics for the hypothesised and fitted models of community participation, including the start and end values for the Akaike Information Criterion (AIC), and a list of the goodness-of-fit indices. Despite the demands of the parsimony criterion, in the first instance, fitting without removing items was attempted. This was because all fourteen domains of community participation had been tested and were substantively and statistically sound summaries of the data set in this study, and valid, separate forms of community participation. As they reflected a full range of

conceptually and empirically distinct ways in which people could participate in their communities, it was theoretically desirable to consider retaining them all.

Fitting a one-factor community participation model using limited fitting procedures

This model therefore includes fourteen items. Overall, both the absolute and the incremental fit indices suggested that the hypothesised model did not fit the data well. In addition, the AIC start value was very high, and most of the item reliability coefficients were unacceptably low. It was therefore necessary to modify this model. The modification indices indicated that several error terms could be covaried. This was done, one by one, with the fit indices reviewed after each modification to see whether the model fit the data better. Following twenty separate error term covariances, the model fit the data better (see Figure 4.3).

However, the absolute and incremental fit indices showed the model still did not fit the data well. In addition, while the AIC value was smaller, it was still large, and the item reliabilities were still mostly in an unacceptable range. This model could not be accepted and it was necessary to move to model fitting using the full range of fitting procedures.

The very large number of covariances required in attempting to fit this model without deleting items suggested three possibilities. One was that some of the domains of participation were highly intercorrelated, such that a nested design would fit the data better. This was what was suggested by the exploratory factor analysis reported earlier in this chapter. The significant and sometimes substantial bivariate correlations between the *super-domains* of participation, as presented in Table 4.4, further substantiated this possibility. Another possibility was that some of the domains were collinear. A third possibility was that some of the domains of community participation were not strongly representative of the concept and should be deleted from the model to achieve data fit and greater conceptual clarity. These were not mutually exclusive possibilities.

Table 4.5. Summary of fit statistics for a one-factor confirmatory model of community participation comparing a hypothesised model (Model A), a model fitted only using error covariances (Model B) and a final, fitted model using item deletion and error covariances (Model C).

Criterion	Acceptable value	Sample statistics			Meets criterion		
		Model A	Model B	Model C	Model A	Model B	Model C
CMIN	p>.05	.00	.00	.42	X	X	✓
CMIN/DF	1 to 2	6.48	3.38	.95	X	X	✓
RMSEA	<.05-.08	.08	.05	.00	✓	✓	✓
RMR	<.05	.21	.20	.03	X	X	✓
GFI	>.90	.93	.97	1.00	✓	✓	✓
AGFI	>.90	.90	.95	1.00	✓	✓	✓
TLI	>.90	.34	.72	1.00	X	X	✓
CFI	>.95	.44	.82	1.00	X	X	✓
NFI	>.90	.41	.77	.99	X	X	✓
AIC (start/end)	High, then low	554.84	288.43	26.85	X	✓	✓
Item reliability	SMC>.30-.50	.10-.43	.00-.75	.09-.66	X	X	X

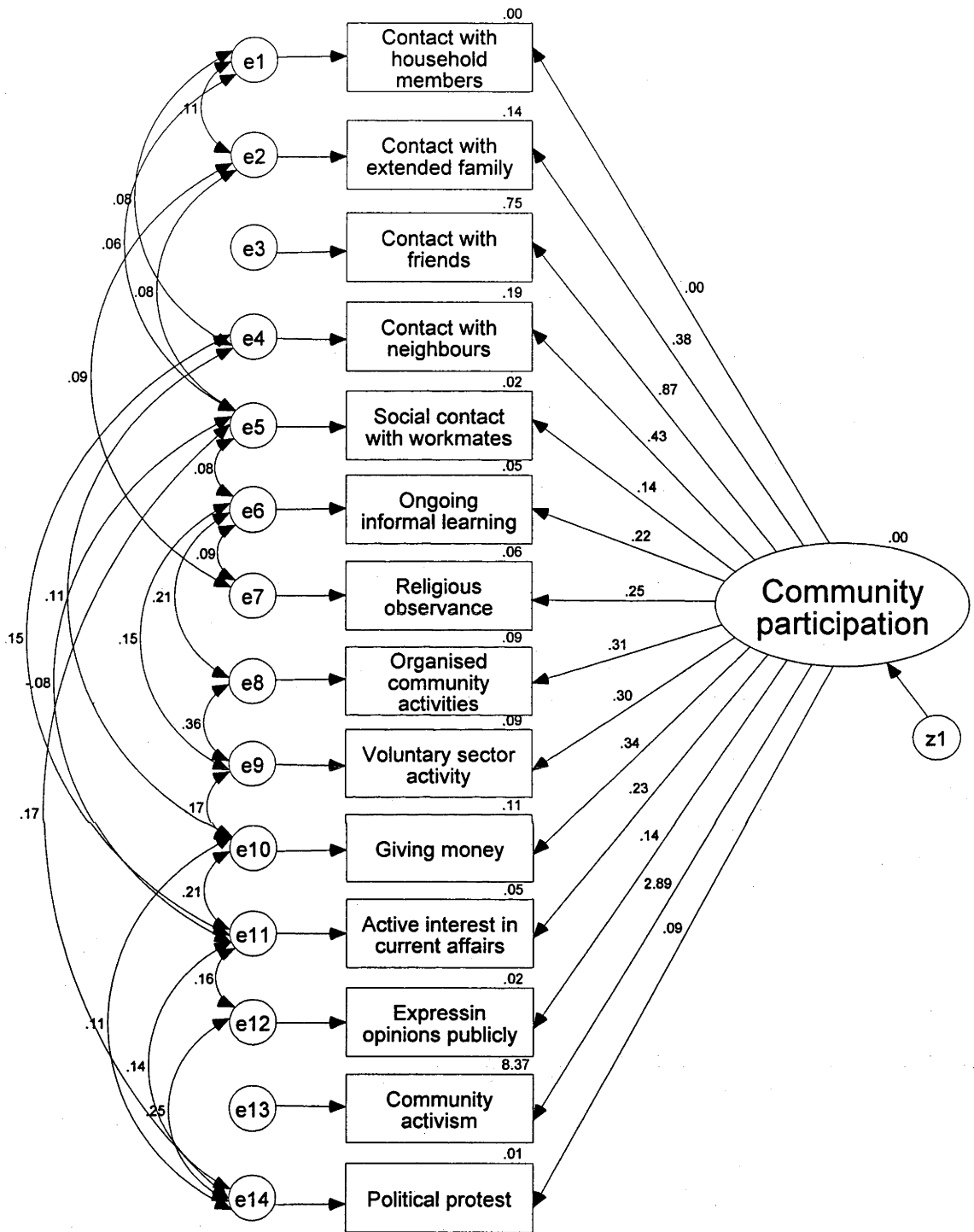


Figure 4.3. Partly fitted fourteen-item one-factor congeneric model using limited fitting procedures (error term covariances only).

These possibilities were tested first by constructing a confirmatory factor model using full fitting procedures (that is, including item deletion), then by attempting to fit a nested model. A report of the item deletion approach follows in the next section, with testing of the nested design reported after that.

Fitting a one-factor community participation model using full fitting procedures

This fitted model included five items. As we have already seen, the absolute and incremental fit indices suggested that the hypothesised model did not fit the data well, and the AIC start value was very high. In addition, item regression weights, squared multiple correlations and factor weights indicated that it might be appropriate to delete several items. Modification was therefore undertaken.

With regard for parsimony, the usual approach to fitting a model would be to remove all weak items before considering covarying error terms. However, in this case, it remained theoretically desirable to retain as many of the domains of participation as possible in the model. Therefore, the single least well-fitting item was removed and any changes to the model fit examined. The item was then replaced and another ill-fitting item removed and its effect tested. This process was continued until the item whose removal would most assist with model fitting had been identified. This item was then removed permanently from the model. Before identifying another item to delete, modification indices were examined with a view to covarying error terms. Error terms were then covaried, one at a time, as before, to try to achieve model fit without removing another item. The purpose of this approach was to attempt to fit the model without removing any more items than was essential. This was not initially successful, and several items eventually had to be removed. This process was repeated until the model fit the data with the most possible items retained.

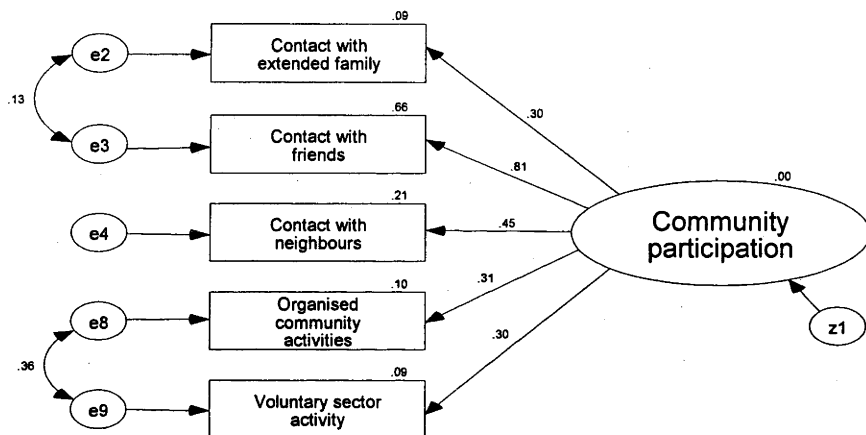


Figure 4.4. Five-core-item one-factor congeneric model of volitional community participation fitted using full fitting procedures.

Five core domains of community participation

In the end, nine of fourteen items were removed from the model and five were retained, and two error terms were covaried. The final model is presented in Figure 4.4. Absolute and incremental fit indices suggested that this model fit the data very well, as did the greatly reduced and very low AIC value. However, item reliabilities were not all within the acceptable range, suggesting that the items may not all be valid indicators of the *same* construct and it would not be appropriate to generate a single composite score for community participation. The factor did not require renaming as a result of these modifications, but further comment on the extensiveness and implications of item deletion follows in the conclusions to this analysis. In the mean

time, in the final model, the domain with by far the largest weighting and that which best reflected the construct was “contact with friends”.

A NESTED MODEL OF COMMUNITY PARTICIPATION: INTRODUCTION

The second-order exploratory factor analysis described earlier in this chapter identified three super-domains of community participation, “informal social connectedness”, “civic engagement” and “political participation”, and one unstable factor containing two domains, “social contact with workmates” and “contact with household members”. This factor structure was used as a hypothetical nested model for testing via confirmatory factor analysis.

One-factor congeneric models of super-domains of community participation

Testing the nested model was itself a two-step process because the hypothetical structure contained three latent constructs each with variables loading on them. These were second-order one-factor congeneric models and needed to be modeled in exactly the same way as the first-order one-factor congeneric models described in Chapter 3, before proceeding to the full confirmatory model. This was therefore the starting point for this analysis. Fit statistics for these models are reported in Table 4.6.

One of the factors, the unstable factor, could not be fitted because, with only two variables loading on it (only one substantially), the model was unidentified. These variables were therefore retained as separate items in the hypothetical confirmatory model (see Figure 4.5). Another factor, political participation, had only three items loading on it and was thus saturated. Therefore, this model also could not be fitted. However, it was possible to generate reliability estimates for the items, which are an indicator of the strength of the factor, and this was done. With item squared multiple correlations ranging from .46 to .72, well above the threshold of .30, the items were all adequate and representative of their super-domain. The super-domain was therefore likely to be stable and was suitable for testing as a second-order one-factor congeneric model in the full confirmatory model. The domain with the largest weighting and that which best reflected the construct was “community activism”.

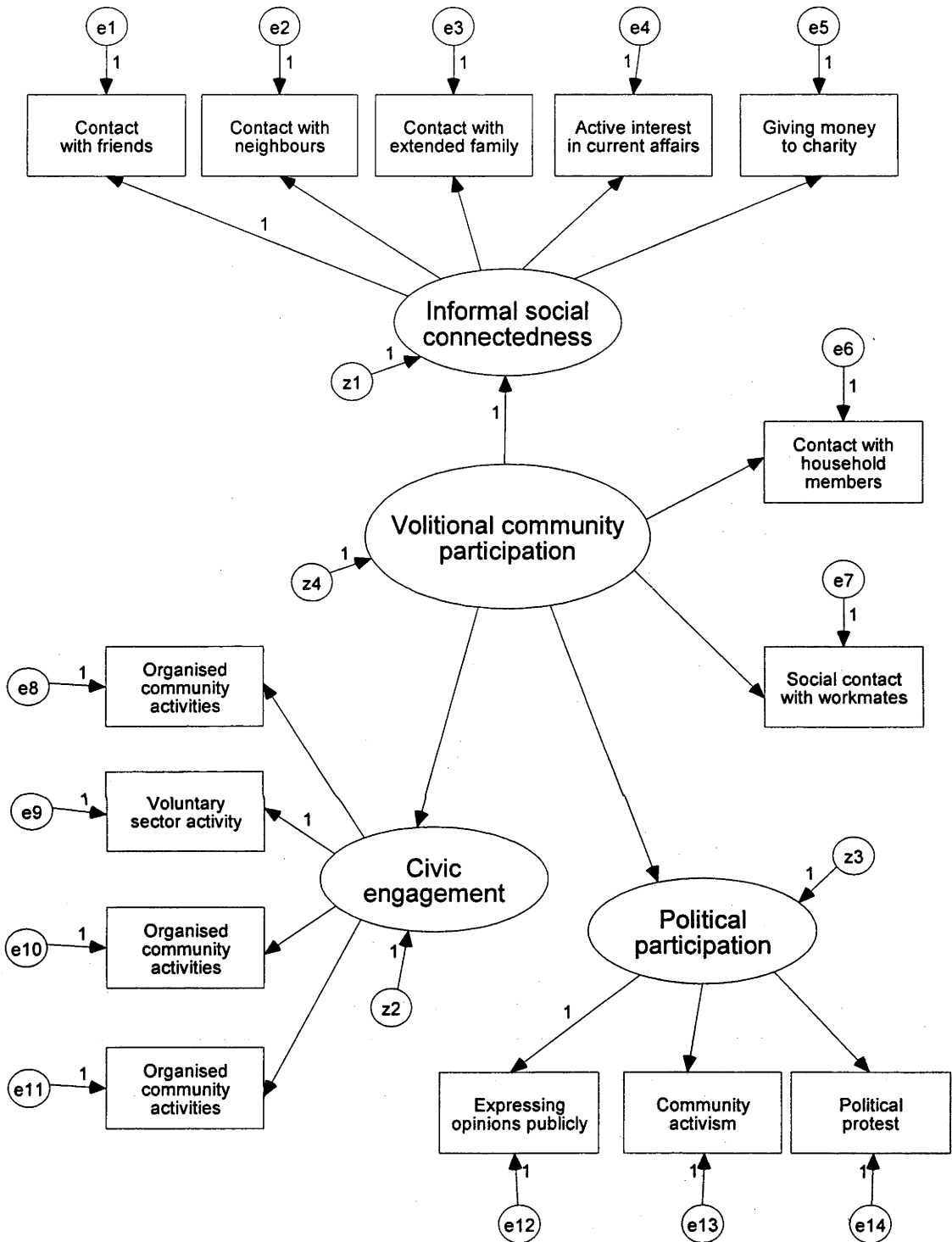


Figure 4.5. Hypothetical nested, or hierarchical model of volitional community participation based on second-order exploratory factor analysis.

Table 4.6. Summary of fit statistics for one-factor confirmatory models of two super-domains of community participation comparing a hypothesised model (Model A) and fitted model (Model B).

Super-domain	Criterion	Acceptable value	Sample statistic		Meets criterion	
			Model A	Model B	Model A	Model B
Informal social connectedness	CMIN	p>.05	.00	.06	X	✓
	CMIN/DF	1 to 2	7.36	2.45	X	X
	RMSEA	<.05-.08	.08	.04	X	✓
	RMR	<.05	.08	.04	X	✓
	GFI	>.90	.98	1.00	✓	✓
	AGFI	>.90	.95	.98	✓	✓
	TLI	>.90	.70	.93	X	✓
	CFI	>.95	.85	.98	X	✓
	NFI	>.90	.84	.97	X	✓
	AIC (start/end)	High, then low	56.80	31.33	X	✓
	Item reliability	SMC>.30-.50	.15-.50	.06-.59	X	X
	Scale SMC	Approx >.70	N/a		N/a	
	Scale Cronbach	Approx >.70	N/a	.53	N/a	X

(Table continued next page.)

Table 4.6 (continued). Summary of fit statistics for one-factor confirmatory models of two super-domains of community participation comparing a hypothesised model (Model A) and fitted model (Model B).

Super-domain	Criterion	Acceptable value	Sample statistic		Meets criterion	
			Model A	Model B	Model A	Model B
Civic engagement	CMIN	p>.05	.00	.01	X	X
	CMIN/DF	1 to 2	6.30	7.25	X	X
	RMSEA	<.05-.08	.07	.08	✓	✓
	RMR	<.05	.07	.06	X	X
	GFI	>.90	.99	1.00	✓	✓
	AGFI	>.90	.97	.97	✓	✓
	TLI	>.90	.86	.84	X	X
	CFI	>.95	.95	.97	✓	✓
	NFI	>.90	.95	.97	✓	✓
	AIC (start/end)	High, then low	28.60	25.25	X	✓
	Item reliability	SMC>.30-.50	.11-.43	.09-.44	X	X
	Scale SMC	Approx >.70	N/a		N/a	
	Scale Cronbach	Approx >.70	N/a	.59	N/a	X
α						
Political participation	Item reliability	SMC>.30-.50	.46-.72	N/a	✓	N/a
	Scale SMC	Approx >.70	N/a		N/a	
	Scale Cronbach	Approx >.70	N/a	.76	N/a	✓
	α					

The two remaining super-domains of community participation, “informal social connectedness” and “civic engagement”, contained four or more items and could be fitted. The results of this process are presented below.

Informal social connectedness

This model includes five items. Absolute fit indices, including the RMSEA, and several incremental fit indices, including the TLI, suggested that the hypothesised model did not fit the data well. Modification was therefore undertaken. Item regression weights, squared multiple correlations and factor weights indicated that it would not be necessary to delete any items, so the modification indices were inspected. These indicated that two of the error terms could be covaried. This was done, following which all but one of the less important fit indices showed that the model fit the data well. This was further confirmed by all the incremental fit indices, and the parsimony index (the AIC) showed a reduction. The data therefore fit the model adequately.

However, some item reliabilities were not strong, indicating that not all the items were strongly representative of the *same* underlying construct. This would be a matter for further testing in the full confirmatory model. In the mean time, overall the model fit the data well and was suitable for inclusion in a full confirmatory model. In the final model, the domain with by far the largest weighting and that which best reflected the construct was “contact with friends”.

Civic engagement

This model includes four items. The most important absolute fit index, the RMSEA, and several incremental fit indices, including the TLI, suggested that the hypothesised model did not fit the data well. Modification was therefore undertaken. Item regression weights, squared multiple correlations and factor weights indicated that it would be appropriate to delete one or two items. However, this would have left the model saturated or unidentified,

and thus rendered it impossible to fit. Therefore, the items were not deleted and the modification indices were inspected instead. These indicated that two of the error terms could be covaried. This was done, following which several of the absolute and incremental fit indices showed that the model still did not quite fit the data. Nevertheless, it came close, and would be suitable for further testing in the full confirmatory model.

The two weakest domains, “religious observance” and “ongoing informal learning”, did not have strong item and scale reliabilities, indicating that they may not fit in the larger model. In terms of the one-factor model of participation, these were non-core items, further evidence they might thus not fit in the final nested model. In the final model, the domain with the largest weighting and that which best reflected the construct was “voluntary sector activity”, followed closely by “organised community activities”.

FITTING THE NESTED MODEL

With the constituent parts of the full confirmatory model tested as far as was possible, it was appropriate to build the full nested model. This was done according to the hypothetical structure suggested by the second-order exploratory factor analysis, taking account of the second-order one-factor congeneric modelling just described. The hypothetical nested model of community participation appears in Figure 4.5 and the fitted model in Figure 4.6.

This full hypothetic model contained four latent variables and all fourteen observed variables. Several of the fit indices, including the RMSEA, suggested that the hypothesised model did not fit the data well. Modification was therefore undertaken. Item regression weights, squared multiple correlations and factor weights indicated that it was appropriate to delete several items, and this was done, one by one in the same way as for the fourteen factor confirmatory model. That is, item deletion was avoided where possible, with particular attention paid to not deleting core items (which, in any case and as would be expected, were not candidates for deletion).

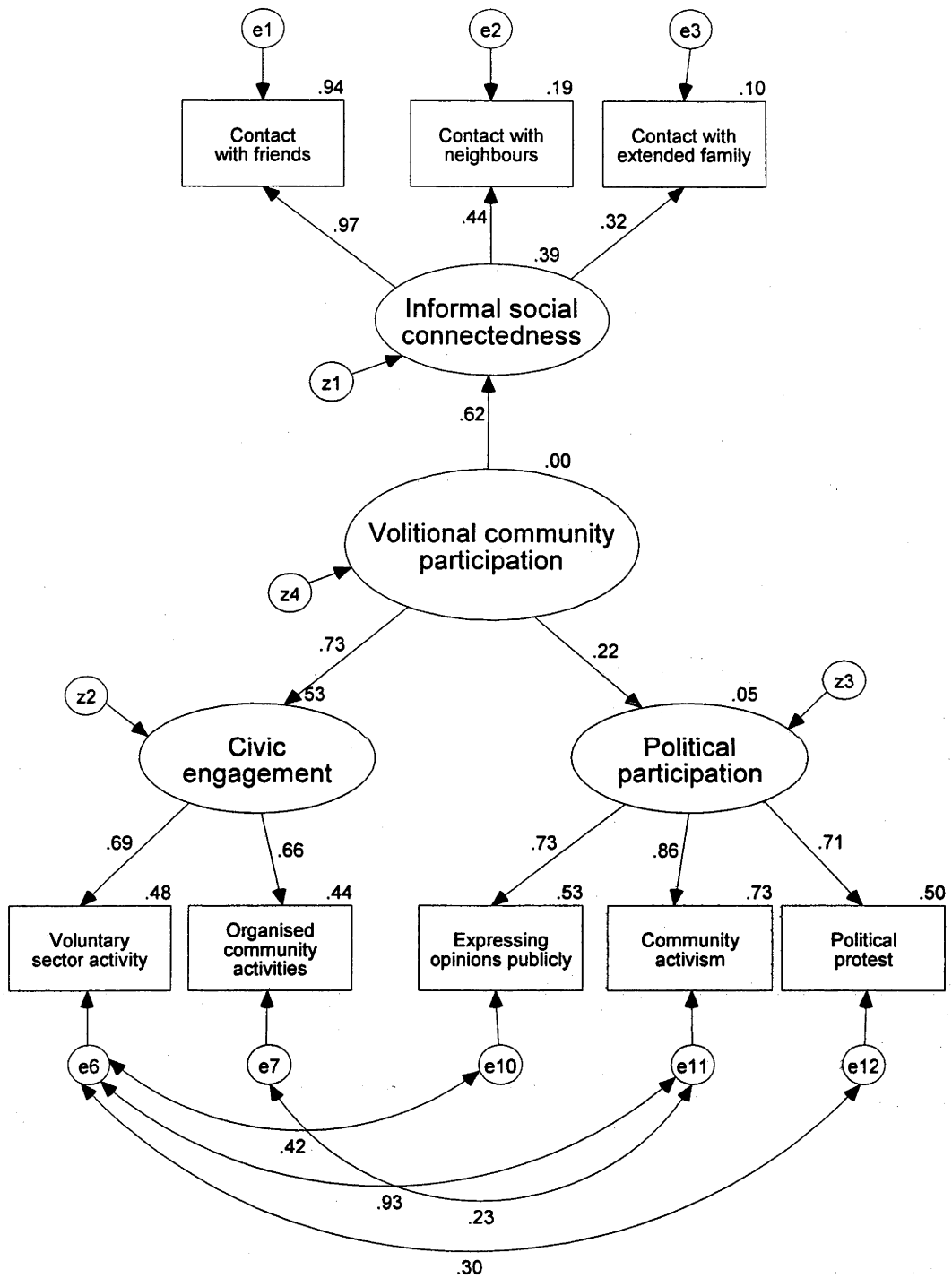


Figure 4.6. Fitted nested, or hierarchical model of volitional community participation.

Following the deletion of some items, the model still did not fit the data, and the modification indices were inspected. These indicated that four pairs of error terms could be covaried. This was tested by covarying error terms one at a time, following which all of the fit indices showed that the model fit the data very well. The parsimony fit index (the AIC) also showed a very substantial reduction, as shown in Table 4.7.

Table 4.7. Summary of fit statistics for a nested confirmatory model of community participation comparing a hypothesised model (Model A) and a final, fitted model (Model B).

Criterion	Acceptable value	Sample statistic		Meets criterion	
		Model A	Model B	Model A	Model B
CMIN	p>.05	.00	.14	×	✓
CMIN/DF	1 to 2	4.93	1.41	×	✓
RMSEA	<.05-.08	.06	.02	✓	✓
RMR	<.05	.18	.05	×	✓
GFI	>.90	.95	1.00	✓	✓
AGFI	>.90	.92	.99	✓	✓
TLI	>.90	.53	.97	×	✓
CFI	>.95	.63	.99	×	✓
NFI	>.90	.58	.96	×	✓
AIC (start/end)	High, then low	421.28	64.37	×	✓
Item reliability	SMC>.30-.50	.00-.59	.13-.75	×	×

None of the “core” domains of community participation was deleted. Indeed, all five were retained, along with the three political participation domains, which also fit the nested model well.

PRESENTING THE FINAL NESTED MODEL OF VOLITIONAL COMMUNITY PARTICIPATION

The next sections report on the conclusions that can be drawn from this alternative, nested approach to building the full confirmatory factor model of community participation.

The hierarchical structure of volitional community participation

The nested, hierarchical factor structure was theoretically and in practice more appropriate for describing the super-structure of volitional community participation than the one-factor model. In the nested structure, community participation comprised a hierarchy of latent concepts that reflected the hypothesised structure and included those domains of participation that the preparatory analyses had indicated were most representative of each of the super-domains.

Overview

The highest-level concept in this hierarchical model is that of volitional community participation itself. It is made up of three lower-order concepts, or “super-domains” of community participation. The most important of these, both statistically and in terms of frequency of participation, was informal social connectedness. The next most important super-domain was civic engagement, and political participation was the third.

In the final fitted model, each of the super-domains of participation themselves comprised a series of latent variables. These were the separate domains of participation drawn from the exploratory factor analysis. Informal social connectedness included, in order of statistical importance, contact with friends, contact with neighbours and contact with extended family. Civic engagement included voluntary sector activity and organised community activities. Political participation included community activism, political protest and expressing opinions

publicly. Error term covariances in the fitted model suggested substantial associations between civic engagement and political participation, particularly between voluntary sector activity and all domains of political participation. Finally, each of the lowest-order latent variables, the domains of community participation, contained specific examples of activities that constituted participation. However, in the hierarchical model, these had been summarised as composite scores.

What this says about community participation

The structure of community participation may be understood in a little more detail by examining particular features of the domain structure, including which items dominate their super-domains, and dominate the concept of community participation generally, and which were omitted. These are discussed below.

Dominant concepts within the structure of participation: the importance of friends and getting involved in civic life

Of the three super-domains of participation, with a standardised regression coefficient of .76, civic engagement made the largest contribution to explaining levels of volitional community participation. It was followed by informal social connectedness, with a standardised regression coefficient of .58, while political participation contributed the least, with a standardised regression coefficient of .34. However, while civic engagement was the super-domain that made the largest contribution to explaining amounts of volitional community participation, the domain that contributed the most was not drawn from civic engagement. Instead, contact with friends, the key concept within informal social connectedness, was the most heavily loading domain with a standardised factor weighting of .34, followed by the two civic engagement domains (organised community activities (.22) and voluntary sector activity (.17)).

Within the super-domains, with a standardised factor weighting of .72, contact with friends was by far the domain of community participation that made the greatest contribution to explaining levels of informal social connectedness. With standardised factor weightings of .46

and .44 respectively, voluntary sector activity and organised community activities were equally representative of civic engagement. With respect to political participation, community activism made the largest contribution to explaining levels of activity within its super-domain, with a standardised factor weighting of .68.

In sum, then, based on the factor analyses reported in Chapter 3 and this chapter, the concept of volitional community participation can be said to revolve around contact with friends, getting involved in the voluntary sector and taking part in organised activities in the community.

Omitted domains: what about households and workmates?

From the perspective of what community participation does *not* revolve around, it must be noted that six of the original fourteen domains of community participation were redundant in the well-fitting confirmatory model. These domains were contact with household members, social contact with workmates, ongoing informal learning, religious observance, giving money to charity and active interest in current affairs. Given that these were all theoretically and empirically valid domains of participation, some of which are clearly an important part of many people's lives, their omission from the final model warrants comment.

The first two mentioned, contact with household members and social contact with workmates, appeared on their own factor in the exploratory factor analysis, and did not load on any other factor. Indeed, contact with household members loaded with such a small loading (.12) that it could only be considered of negligible importance on the workmates factor. In both the one-factor and the nested approaches to the confirmatory factor analyses, it was not possible to fit the models without deleting these domains. Indeed, they were the first to be deleted. Thus both the second-order exploratory and confirmatory types of factor analysis led to a conclusion that these domains did not fit within the structure of community participation.

Nevertheless, it would not make sense to say that time spent with household members or workmates are not ways in which people connect with others in their community. Indeed,

contact with household members was the second most frequently reported domain of community participation after taking an active interest in current affairs. As the factor analyses were not able to shed light on why these domains did not fit well within the factor structure, a different approach to analysis was needed. This is discussed in the last part of this chapter.

Learning, religion, giving money and current affairs

With respect to the other four omitted domains, ongoing informal learning, religious observance, giving money to charity and active interest in current affairs, the most likely reason for the requirement to delete them from the models was collinearity with other variables. Patterns of covariances on their error terms supports this possibility. This does not mean that these are not valid forms of participation. Indeed, two of them, active interest in current affairs and giving money to charity, were two of the four domains of community participation that respondents reported engaging in most often. The answer to why these domains were omitted is more likely to be explained by the analytic method. Confirmatory factor analysis is a form of factor analysis combined with multiple regression analysis. The omission from the final model of certain domains most likely means that those domains did not make a unique contribution to explaining levels of community participation over and above that which the other domains contributed. In other words, they are most like sub-concepts within the bigger concepts of participation, and overlap with them. The use of other analytic methods is therefore required to understand the place of these omitted domains within the larger concept of volitional community participation.

SUMMARY OF RESULTS: MEETING THE AIMS OF THE CONFIRMATORY ANALYSES

Conceptualising community participation

The aims of the confirmatory factor analyses in this chapter were well met.

Firstly, the fourteen domains of community participation were evaluated to examine whether they were all part of the *same* overarching concept. Though many items needed to be deleted

from the model, nevertheless the final model fit the data well. Therefore, at the highest conceptual level, while volitional community participation is not a *unitary construct*, it is a *single concept*. Secondly, these analyses have shown that the separate domains of community participation could be grouped to reveal a higher-order structure of participation. Consistent with the hypotheses, this structure included three super-domains of participation, informal social connectedness, civic engagement and political participation. It is worth commenting further on the relative merits of these two approaches to confirmatory factoring.

Core domains of participation

Analysing community participation as a one-factor model highlighted five “core” domains of participation. These were contact with friends, extended family and neighbours, organised community activities and voluntary sector activity. These could be described as the domains of participation that are central to the overarching concept of volitional community participation. This was a valuable piece of information in its own right. It could also be interpreted as a list of items that should not be left out of a more complex model.

However, the process of identifying these core domains of participation resulted in the exclusion of nine out of fourteen valid and different ways in which people can and do participate in the life of their communities, including all forms of political participation. This represents a great loss of information and subtlety and cannot therefore be said to adequately represent the whole of the concept of community participation. Thus, while the list of five core domains of participation was valuable, and generated as a result of sound methodology and statistical analysis, such a solution to the question of defining community participation is clearly not sufficient. It must therefore be concluded that volitional community participation cannot be exclusively represented as a simple one-factor model and the use of other analytic approaches would be advisable.

The nested, or hierarchical model, on the other hand included domains representative of all the super-domains of participation, and was hardly less parsimonious. In addition, it shed light on the relative contributions to explaining levels of community participation made by both the

super-domains and the domains of participation, and helped explain how these different elements were related. As such, it provided a holistic view of community participation.

Meeting the subsidiary aims of the analyses

Thirdly, these analyses have shown that it would not be appropriate to create composite variables for the super-domains of community participation. It was not therefore possible to explore any associations between the super-domains of participation as concepts in their own right, or to report on the distributions of activity within the super-domains of volitional community participation. However, both of these issues were indirectly addressed by examining relationships among the domains of participation loading on the three super-domains.

DIMENSIONS OF COMMUNITY PARTICIPATION: MULTI-DIMENSIONAL SCALING

In sum, the second-order exploratory and confirmatory factor analyses conducted on these data produced valuable insights into the underlying structures of volitional community participation. However, they left certain questions unanswered, to do with the factor structures themselves and also the factor loadings. In the second-order exploratory factor analyses, many of the domains of community participation did not load substantially on their factors, or loaded onto unstable factors. With the deletion of several domains of participation essential in fitting the confirmatory models, two different approaches to confirmatory factor analysis corroborated the exploratory findings. In particular, one very frequently reported and important domain of participation, contact with household members, did not load on any factor in the exploratory analysis, and could not be included in either fitted confirmatory factor model. Thus, from a factor structure point of view, not all domains of participation fit within the construct of community participation.

Though these conclusions were derived from sound research design and careful and appropriate statistical analysis, from a theoretical point of view, they do not make sense. That is, it does not make sense to present a sound substantive and statistical argument to show that

there are fourteen valid and separate domains of community participation, and then to conclude that some forms of community participation are valid examples of the construct, while some are not. The failure of the factor analyses to adequately explain the structure and dynamics of community participation must therefore be explained. The most likely explanation is that the analytic procedures applied, while adequate in their own right, were not sufficient alone. This would not be surprising given the complexity of the phenomenon being analysed and the range of hypotheses proposed in Chapter 1.

A different analytic method to answer a different research question

It was thus necessary to approach the analysis of community participation from a different angle and use an analytic method designed to address a different kind of research question. In Chapter 1, it was proposed that community participation is dimensional, with domains of participation ordered on a continuum from the most private to the most public (Hypothesis 5). This is a different kind of proposition from that addressed by factor analysing. Factor analyses show how variables may be grouped to reveal latent concepts underlying a data set. That is, they show which variables belong together in one concept, and which belong together in another. For example, a factor analysis of a range of test scores of children in a classroom might reveal underlying concepts, or *factors*, relevant to understanding the children, such as physical activity levels or verbal aptitude.

Analyses designed to uncover *dimensions* within a data set have a different goal. Their goal is to order variables according to some descriptor. Returning to the example of children in a classroom, a dimensional analysis might reveal that the children can be lined up according to age, from oldest to youngest, or height, from shortest to tallest. In some cases (such as for age), dimensions might have something to do with concepts (such as activity levels). In other cases, they might be unrelated. The use of two different analytic strategies together, designed to answer different kinds of research question, may thus deliver a more sophisticated understanding of the phenomenon being investigated.

Aims of a multi-dimensional scaling analysis

A more sophisticated understanding of community participation was the substantive aim of the next analysis conducted for this study, particularly with respect to explaining aspects of the results of the factor analyses. That is, it was intended that an analysis of possible dimensions underlying the domains of participation would generate additional information to help explain the structures and dynamics of participation. And, in particular, it was intended that the analysis would help explain why some domains of participation, especially contact with household members, did not fit adequately within a factor structure of community participation.

The kind of analysis that is appropriate for testing this hypothesis is called multi-dimensional scaling (Diekhoff 1992: pp.376-393). There were two statistical aims of the multi-dimensional scaling analysis. The first statistical aim was to examine whether the fourteen domains of community participation could be ordered according to their degree of public-ness/private-ness, as proposed in Hypothesis 5 in Chapter 1. In addition, multi-dimensional scaling is, like exploratory factor analysis, an exploratory technique. It can therefore be used not only to evaluate a hypothesis about a specific dimension, but also to examine whether a data set contains any alternative or unanticipated dimensions. This was therefore a second aim of the analysis.

STATISTICAL METHODS

Multidimensional scaling refers to a set of related techniques that make it possible to order variables in terms of their relative distances from one another on one or more linear dimensions (Young & Hamer 1994). Very little health-related research has utilised this technique but there is variety in the topics that have been covered. In a Dutch study of 227 adults seeking help for alcohol misuse problems, multi-dimensional scaling was used to map 102 presenting symptoms onto three linear dimensions of alcoholism (Peters 1997).

Multidimensional scaling has also been used to assess, select and refine items for a World Health Organisation measure of quality of life (Skevington et al 1999), to describe two latent constructs underlying pain-related behaviour (Kerns et al 1985), to demonstrate the conceptual

difference, based on a card sort, between people's ideas about wellness and illness (Nielson et al 2003) and, finally, to evaluate cross-cultural differences in underlying beliefs about the causes of illness (Eisenbruch 1990).

Multidimensional scaling can thus be used to reveal underlying themes, or "dimensions" in the structure of dense concepts, such as pain, wellbeing and alcoholism. Statistically, it does this by allocating points to low-dimensional space. That means points are ordered on very few dimensions, usually between one and three. "Points" can be any measurements, or scores on any variable, such as beliefs about the causes of illness, symptoms of alcohol misuse or concepts of wellness. "Distances" can be derived from many sources, such as scale scores, categorical data, or inter-correlations between variables. Points are allocated coordinates, and these define their distances from one another. Their locations relative to each other can be presented as a scatterplot of where each point lies on one or more linear dimensions.

Different approaches to calculating distances are available. Raw data, rather than standardised scores, are often used because the algorithms employed to calculate distances take account of absolute as well as relative distances between points. For continuous data with a large sample, as is the case in this study, two approaches are particularly suitable and both were evaluated. One is the "ALSCAL" approach, the most commonly used multidimensional scaling algorithm, and the other is the more recent "PROXSCAL" approach (eg., Busing et al 1997).

Criteria for evaluating the multi-dimensional solutions

Three criteria were used to ascertain the most acceptable solution. The two most important criteria were parsimony (generating the smallest number of dimensions that would fit the data) and meaningfulness and interpretability (generating dimensions that made sense and were scientifically useful). Meaning is interpreted by examining the points located at the extremes of each dimension and interpreting the dimension they appear to represent.

The third criterion for ascertaining the most acceptable solution was *Kruskal's stress* statistic. As data do not arrange themselves perfectly on straight lines, a degree of stress is placed on

them to make them do so. The stress increases as the number of dimensions decreases because the data are being “forced” onto fewer and fewer straight lines. As this happens, the results generated contain increasing levels of error, until the error levels become unacceptable and the solution no longer reflects an underlying reality. An acceptable error, or “stress” threshold is therefore applied. The number of dimensions before the point at which the stress on the data becomes unacceptable is the smallest number of dimensions to which the data can be reduced. Various measures of stress are available, with *Kruskal’s stress* the most widely used. This statistic ranges from 0 to 1, with higher scores indicating greater stress. A score of .15 or less is acceptable. With respect to evaluating stress, the PROXSCAL algorithm for multi-dimensional scaling has an advantage over the ALSCAL method in that it specifically aims to minimise *Kruskal’s stress* (Busing et al 1997).

DIMENSIONS OF COMMUNITY PARTICIPATION: RESULTS OF MULTI-DIMENSIONAL SCALING

Comparing six solutions

Table 4.8 summarises the results of the multidimensional scaling analyses. For each approach, one-, two- and three-dimensional solutions were computed. Thus, six possible solutions to the multi-dimensional scaling analysis were produced: three based on the ALSCAL method and three on the PROXSCAL method. These are discussed below in terms of the evaluation criteria of parsimony, model fit and meaningfulness

Table 4.8. Summary of multi-dimensional scaling solutions for one, two and three dimensions of community participation using Alscal and Proxscal scaling methods (best solutions highlighted).

	ALSCAL method			PROXSCAL method		
	One dimension	Two dimensions	Three dimensions	One dimension	Two dimensions	Three dimensions
Parsimony	Excellent	Excellent	Acceptable	Excellent	Excellent	Acceptable
Meaningfulness	Excellent	Poor	Poor	Excellent	Excellent	Poor
Stress	.10	.07	.05	.12	.06	.03

Parsimony

Though the hypothesis set out in Chapter 1 proposed that there would be one underlying dimension of community participation, it was appropriate to compute one-, two- and three-dimensional solutions. There were two reasons for this. The first was that, as multi-dimensional scaling can be used as an exploratory technique, it was appropriate to check whether more than one underlying dimension of participation would be meaningful and scientifically useful, and fit the data better than the hypothesised one-dimensional solution. The second reason is that it is possible to estimate the number of dimensions that might be expected from a given data set. That is, Kruskal and Wish (1978), in (Diekhoff 1992), have proposed an equation for the maximum number of dimensions that should be extracted for a given number of points in the matrix: $D \leq (k-1)/4$, where D =maximum number of dimensions and k =number of points. In this case, with fourteen points, the maximum number of dimensions would be three. Based on this proposition, any of the one-, two- or three-dimensional approaches that was meaningful and fit the data would be acceptable within the criterion of parsimony. However, a one- or two-dimensional solution was preferable because such solutions are simpler to interpret and understand, and therefore more useful.

Model fit

With Kruskal's stress less than .15 in each case, all the solutions fit the data. As expected, the three-dimensional solutions fit the data better than the two-dimensional solutions, and the two-dimensional solutions better than the one-dimensional solution. Also as expected, the PROXCAL solutions mostly fit the data slightly better than the ALSCAL solutions, though the ALSCAL one-dimensional solution fit the data better than the PROXSCAL one-dimensional solution. In sum, the criterion of fit was met in all cases.

Meaningfulness and scientific usefulness

Having established that all the solutions met the parsimony and data fit criteria, the criterion of meaningfulness and scientific value was particularly important in determining an optimal solution.

The first dimension

All six solutions produced the same first dimension. At one end of the dimension were contact with household members, active interest in current affairs, giving money to charity and contact with friends and extended family.

These appeared to be activities that were part of people's private lives. At the other end of the dimension were community activism, political protest, ongoing informal learning and expressing opinions publicly. These appeared to be forms of participation that would form part of people's public lives.

Thus there appeared to be, as hypothesised, a public-private dimension to community participation. Consistent with the hypotheses, the most extreme domain of community participation on the public-private dimension was in all solutions contact with household members while the most extreme public domain was community activism. Almost without exception, the order of items on the first dimension was identical in all six solutions. Such similarity of results across solutions, both in terms of meaning and item order, suggests a stable dimension.

The second dimension

The second dimensions produced in both the two- and three-dimensional ALSICAL solutions were very similar to each other, as were the second dimensions produced in the PROXSCAL solutions. However, the ALSICAL and PROXSCAL solutions were different from each other. The ordered domains for the second dimensions produced in the ALSICAL and PROXSCAL two-dimensional solutions are presented in Table 4.9.

Several domains of participation appeared at different ends of the dimensions using the different methodologies, though in both cases, the domains at both extremes were the same. Contact with household members appeared at one end of the dimension in both cases, and organised community activities at the other.

Table 4.9. Order of domains of participation (highest first) for choice-obligation dimension for a multi-dimensional scaling solution using PROXSCAL and ALSCAL methodologies.

Ordered domains of participation	
PROXSCAL	ALSCAL
Obligation	Obligation?
Contact with household members	Contact with household members
Social contact with workmates	Voluntary sector activity
Religious observance	Contact with friends
Contact with extended family	Contact with neighbours
Community activism	Active interest in current affairs
Political protest	Ongoing informal learning
Giving money to charity	Giving money to charity
Choice	Choice?
Organised community activity	Organised community activity
Voluntary sector activity	Social contact with workmates
Active interest in current affairs	Religious observance
Contact with friends	Expressing opinions publicly
Expressing opinions publicly	Community activism
Contact with neighbours	Political protest
Ongoing informal learning	Contact with extended family

As Table 4.9 shows, interpretation of the second dimensions produced by the ALSCAL methodology was difficult, with no theme apparent. The second dimension produced by the PROXSCAL methodology, however, was interpretable. At one end of the dimension were organised community activities, voluntary sector activity, active interest in current affairs and contact with friends. These domains seemed to reflect activities people would undertake for the pleasure, interest or satisfaction they would give, or just for fun. Thus, these activities seemed to represent things that people would do because they wanted to do them, and only do if they wanted to.

At the other end of the dimension were contact with household members, social contact with workmates, religious observance and contact with extended family. These domains seemed more to reflect life's givens, the fixed structures of community participation, the things that are for many people a non-negotiable part of their routines. They thus seemed to represent those forms of participation that were more subject to obligation, perhaps even undertaken out of a sense of responsibility or duty. Taken as a whole, the second dimension therefore seemed to reflect a choice-obligation theme in community participation. This suggests that, within *volitional* community participation, there is nevertheless an element of obligation associated with some domains of activity.

The third dimension

It was not possible to interpret the third dimension produced in the three-dimensional solutions and some of the items appeared at opposite ends of the dimensions in the two solutions. The third dimensions, therefore, did not meet the meaningfulness and scientific usefulness criterion. They were also the least desirable in terms of parsimony and so are not discussed further.

DETERMINING AN OPTIMAL MULTI-DIMENSIONAL SOLUTION

While the three-dimensional solutions met the parsimony criterion to an acceptable (though not excellent) degree, and met the data fit criterion to an excellent degree, they were unacceptable in terms of meaningfulness and scientific usefulness. That is, neither third dimension was interpretable. The three-dimensional solutions were rejected. The ALSICAL two-dimensional solution was rejected for the same reason. While it met the parsimony and data fit criteria to an excellent degree, the dimension was not interpretable and thus failed to meet the meaningfulness and scientific usefulness criterion.

With both three-dimensional solutions and the ALSICAL two-dimensional solution rejected, it remained to select the best of the one- and two-dimensional solutions that fully met the evaluation criteria. From the point of view of parsimony and conceptual simplicity, a one-

dimensional solution was preferable. As both one-dimensional solutions met the meaningfulness and data fit criteria equally well, and as they were almost identical solutions, either would have been acceptable. In addition, the one-dimensional solutions had the advantage of exactly reflecting the hypothesis. However, the PROXSCAL two-dimensional solution had certain advantages over the one-dimensional solutions, and these were considered.

Comparing one- and two-dimensional solutions

In overview, the PROXSCAL two-dimensional solution demonstrated excellent results in terms of parsimony and data fit. Indeed, with regard to *Kruskal's stress* statistic, with a value of .06 it achieved near perfect fit, better than the one-dimensional solutions. In addition, like the one-dimensional solutions, the two-dimensional solution produced a primary public-private dimension, consistent with the hypothesis. This strength of the one-dimensional solutions is therefore not lost when two dimensions are considered. However, the two-dimensional solution was by definition slightly less parsimonious and therefore less simple. On balance, there was little to choose between the one- and two-dimensional solutions in terms of these first two criteria. But, importantly, the two-dimensional solution had certain advantages in terms of meaningfulness and methodological rigour, and these were therefore considered.

Advantages of the PROXSCAL two-dimensional solution

The PROXSCAL two-dimensional solution had three advantages over the one-dimensional solutions. The first two of these were issues of scientific method, the third of meaning and interpretation. Firstly, multi-dimensional scaling can be used as an exploratory technique. It is therefore appropriate in a thorough analysis to use the technique to explore whether a dimensional structure other than that hypothesised would make more sense of the findings and fit the data better. Secondly, a well-fitting two-dimensional solution would, *de facto*, provide a more subtle and informative analysis of the underlying dynamics of participation than would a single dimension alone. Finally, with respect to interpretation, a two-dimensional solution might help answer specific and important questions that emerged as a result of the factor

analyses reported earlier. In particular, it might explain why contact with household members could not be included in any exploratory or confirmatory factor solution. This was an important issue to investigate and is discussed next.

Why contact with household members did not fit in a factor solution

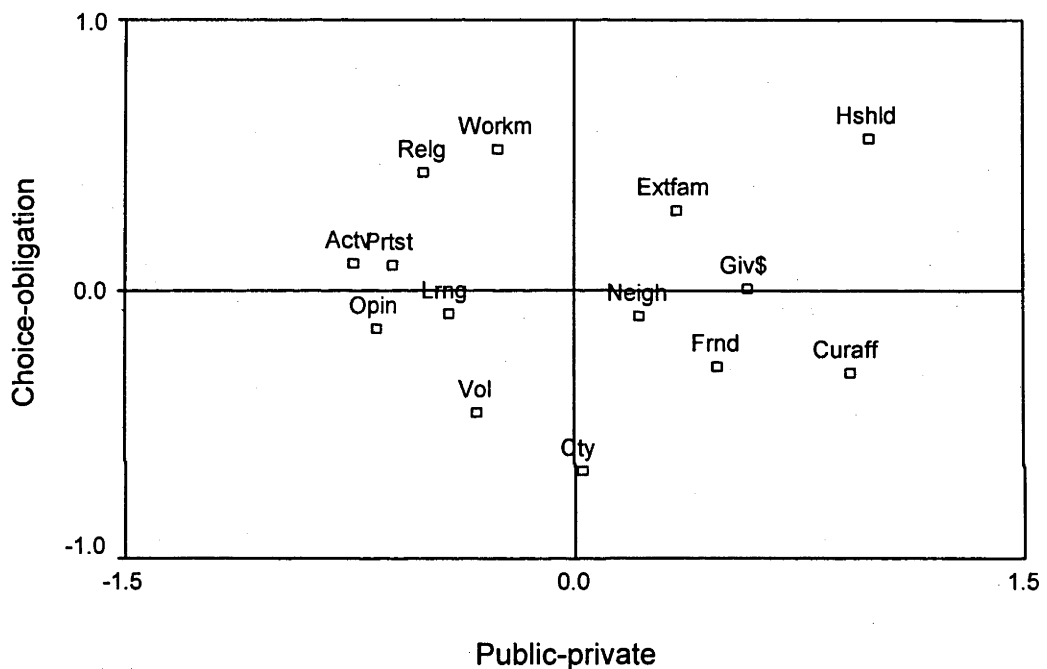
The question of why some domains did not load on factors is most easily understood by inspecting a listing of items and co-ordinates for the one-dimensional solution and a scatterplot of the two-dimensional solutions, as presented in Table 4.10 and Figure 4.7 respectively.

Table 4.10. Order of domains of participation (highest first) for public-private dimension for a multi-dimensional scaling solution using the ALSCAL methodology

Dimension end	Domain of participation	Coordinate
Public	Community activism	-1.24
	Political protest	-.98
	Expressing opinions publicly	-.95
	Religious observance	-.92
	Social contact with workmates	-.79
	Ongoing informal learning	-.77
	Voluntary sector activity	-.45
Private	Contact with household members	2.05
	Active interest in current affairs	1.58
	Giving money to charity	.82
	Contact with friends	.77
	Contact with extended family	.54
	Contact with neighbours	.31
	Organised community activities	.05

Looking at the one-dimensional solution presented in Table 4.10, it can clearly be seen that contact with household members lies, as was hypothesised, at the “private” extreme of the public-private dimension. It may be, therefore, that the failure of this domain to fit adequately

in a factor solution could be partly explained by the extremity of its location on the public-private dimension of community participation. However, with another domain (active interest in current affairs) lying close by, this is not a particularly persuasive argument; it is not possible to answer the research question conclusively based on a one-dimensional analysis alone. The more complex two-dimensional picture, on the other hand, does suggest an explanation of why contact with household members did not fit adequately in a factor solution.



Figure

Figure 4.7. Scatterplot of two-dimensional solution to multi-dimensional scaling analysis of fourteen domains of community participation showing public-private and obligation-choice dimensions of participation.

Contact with household members is not “like” other forms of participation

As in the one-dimensional solution, contact with household members was located at the “private” extreme of the public-private dimension in the two-dimensional solution. It was also located at the “obligation” extreme of the choice-obligation dimension, also close to another

domain (social contact with workmates). Thus, contact with household members was located at one extreme of *both* dimensions of participation. What is interesting therefore is to look at its location on the extremes of both dimensions taken together.

As Figure 4.7 shows, on both dimensions taken together, contact with household members was located far away from *both* its nearest neighbours on each individual dimension. That is, even though contact with household members had near neighbours on both dimensions, its extreme coordinates on both these dimensions located it at an extreme distance from *all* the other domains when the two dimensions were considered together. This suggests an explanation for why, though clearly a valid, or “real” form of community participation, contact with household members could not be allocated to a factor structure. The explanation is because of the statistical goals and procedures of factor analyses, that are designed to groups like items. That is, in terms of the dimensional structure of community participation, contact with household members is not “like” any other domain. From the point of view of meaningfulness and scientific usefulness, this is a valuable possible explanation.

.... nor is social contact with workmates

A similar explanation can be applied both to why social contact with workmates had its own factor and why contact with household members loaded only on the workmates factor, and then only weakly. Looking again at the scatterplot in Figure 4.7, it can be seen that social contact with workmates is the only domain of community participation that is located at the extreme of the obligation end of the choice-obligation dimension, while simultaneously being located towards the public end of the public-private dimension. No other domain shares these characteristics. With respect to its relationship with contact with household members, as we have seen, they share a position at the extreme end of the obligation end of the choice-obligation dimension. This is what they have in common. The most likely reason they do not share an equally strong loading on the same factor is that contact with household members is an extremely private domain of participation, while social contact with workmates is somewhat public.

This leads to one final point about socializing with workmates. This is that, in Chapter 1, it was hypothesised that social contact with workmates was part of informal social connectedness (Hypothesis 3, and see also Figure 1.1). This was not borne out by the various factor analyses. Looking at the dimensions of participation, it can be seen that people socialise with their workmates primarily out of a sense of obligation, and they consider this activity to be part of their public lives. However, the domains of participation that are part of informal social connectedness fall at the private and mainly at the choice ends of the two dimensions, in contrast to the location of social contact with workmates. Thus, a possible explanation for why social contact with workmates was not part of informal social connectedness is that it falls at opposite ends of the dimensions from the connectedness domains.

Other omitted domains, and what can be inferred about the dynamics of participation

A similar reasoning can be applied to the other domains of participation that did not load heavily on their factors in the second-order factor analysis and that were deleted from the final confirmed factor structure. Following on from that, certain possibilities can be canvassed about the dynamics of community participation with respect to their super-structures.

Informal social connectedness

All five domains of participation loading on the hypothetical factor structure of informal social connectedness as suggested by the exploratory factor analysis also fit the one-factor congeneric model. However, in the hierarchical confirmatory model of community participation, two of the domains were deleted. These were giving money to charity and active interest in current affairs. As Figure 4.7 shows, these domains appeared at the private extreme of the public-private dimension of participation, which may be part of the reason they did not fit well in the full confirmatory model.

In general, in terms of the dimensions of participation, informal social connectedness can be characterised as a set of activities that are part of people's private lives. Based on the factor

analyses, it has been proposed that the core concept of informal social connectedness, and of community participation as a whole, was contact with friends. With respect to the dimensions of participation, contact with friends is located in the private-choice quadrant of the scatterplot, but not at the extremes of either dimension. Taking the findings of the factor analyses and multi-dimensional scaling together, this suggests that, at its core, informal social connectedness specifically, and community participation generally, revolve around engaging in one's private life with others one chooses to be with, but not without some degree both of sense of obligation and sense of being in public.

Civic engagement

Organised community activities and voluntary sector activity were the key concepts in civic engagement as suggested by both the exploratory and confirmatory factor structures. Omitted from the final confirmatory model were religious observance and ongoing informal learning. These omissions can be explained in terms of the dimensions of participation. Both organised community activities and voluntary sector activity are located at the extreme of the choice end of the choice-obligation dimension, suggesting that people conceptualise civic engagement as a set of activities they undertake because they want and choose to undertake them. Thus, in terms of the dimensions of participation, civic engagement is characterised by being a set of activities of choice.

Religious observance, on the other hand, is located at the obligation end of the choice-obligation dimension and is thus a domain of participation that people engage in with a strong element of sense of obligation. This does not mean that people do not get pleasure from religious observance, but that pleasure alone is not what drives them to do it. This would explain why it did not load strongly on the civic engagement factor. The same may be said of ongoing informal learning. This is located in the middle of choice-obligation dimension, also some distance from the core domains of civic engagement. It is also located at the public end of the private-public dimension, together with the domains of political participation. This would also help explain why ongoing informal learning did not fit well with the factor

structure of civic engagement and why it correlated at the bivariate level with the political participation domains as well as the civic engagement domains.

Political participation

The exploratory and confirmatory factor analyses showed that three domains of participation loaded substantially and stably on the super-domain of political participation. These were community activism (the key concept), political protest and expressing opinions publicly. All three domains were clustered together at the private end of the public-private dimension, and all fell close to the middle of the choice-obligation dimension. Thus, political participation can be characterised as a set of activities that are part of people's public lives, and balanced in terms of choice and obligation. Their close co-location on both dimensions of participation suggests an explanation for their strong factor structure.

PRESENTING TWO DIMENSIONS OF COMMUNITY PARTICIPATION: PUBLIC VS PRIVATE AND OBLIGATION VS CHOICE

In sum, both one-dimensional solutions and the PROXSCAL two-dimensional solution met the criteria of parsimony, model fit and meaningfulness to an excellent degree. Any one of them could have been justifiably selected as the final solution. However, the two-dimensional solution had several additional advantages over the one-dimensional solutions. These were that it was the more scientifically rigorous solution and, importantly, more meaningful and scientifically useful. Not only did the two-dimensional solution deliver a subtle and informative characterization of the dimensionality of community participation, it also suggested an explanation for why some domains of participation could not be fitted within an otherwise sound factor structure. It offered two particular benefits in this respect.

Firstly, it showed how contact with household members is located at the extreme ends of the private and obligation-based dimensions of participation, far from all other forms of participation. And secondly, it showed that the super-domains of participation are characterised partly by their locations along the dimensions of participation. That is, informal social connectedness is part of private life, while political participation is part of public life.

Civic engagement is primarily defined as something people do by choice. Finally, people socialise with their workmates primarily out of a sense of obligation.

Study adequacy

One final point is worth mentioning. This is to do with the conceptualization of the study and item sampling. Factor analyses and analyses derived from them, even when they are very well executed, are only as good as the items included in the data set in the first place. This is difficult to test, especially a priori, and there is inevitably a degree of uncertainty in theory development work. That the various factor analyses reported in this study, both exploratory and confirmatory, produced strong and stable solutions that were consistent with the hypotheses, is an indicator that conceptualization and item sampling were adequate. The results of the multi-dimensional scaling analysis provide further evidence of this adequacy. That is, with results again consistent with the hypotheses, and with some domains of participation falling within all four quadrants of the scatterplot, there were no areas of sampling omitted.

SUMMING UP: THE DYNAMICS OF COMMUNITY PARTICIPATION

In this chapter, I have attempted to show that the fourteen separate domains of volitional social participation can be grouped together into three super-domains of conceptually similar types of participation. These reflect the overarching ways in which people participate volitionally in their communities. That is, people connect informally with others, they take part in the civic life of their communities, and they participate in politics.

The same fourteen domains can also be ordered along two dimensions of participation, revealing underlying themes of public versus private life and obligation versus choice in what people do. These themes reflect different parts of people's lives that are expressed through different kinds of participation. People's private lives centre on friends, while their public lives are about making changes in the community through different forms of political participation. People also do things just because they want to, like getting involved in the

civic life of the community. At other times, people engage in activities mainly because they feel obliged to do so, such as participating in social events with workmates.

There is thus variety in the ways in which people participate in their communities, reflecting different parts of their lives and different motivations for doing things. Such diversity suggests there would be a different domain of activity to suit different people and different needs. Also, different people would tend towards certain types of participation in preference to others depending on their personal interests and life circumstances. This is the topic of the next chapter.

CHAPTER 5: PROFILING PARTICIPATORS

CHAPTER SUMMARY

This chapter reports on the use of cluster analysis as a way of classifying respondents in this study into types based on patterns of community participation, together with sex and generation. The chapter presents an argument for the advantages of using this kind of analysis. Some examples from previous research are given that show how cluster analysis has helped further understanding of mental health, and been used to enhance service delivery with respect to mental health needs. The techniques of clustering are discussed, and the results of two cluster analyses presented and evaluated. A seven-cluster solution is preferred over a two-cluster solution. Argument in support of the preferred solution includes an analysis of the distribution of various socio-demographic factors, in addition to sex and generation, among the clusters. The chapter concludes with a presentation of profiles of seven types of community participator in terms of patterns of participation and socio-demographic characteristics.

PEOPLE'S HABITUAL WAYS OF PARTICIPATING IN THE COMMUNITY

The exploratory factor analyses, one-factor congeneric models, confirmatory factor analyses and multi-dimensional scaling described in Chapters 3 and 4 represent different approaches to evaluating the proposition that community participation is a multifaceted concept made up of constituent parts that are related in a variety of ways. The use of these techniques in this study has made it possible to describe the domains, the super-domains, and the dimensions of volitional community participation, so that this multifaceted phenomenon may be better understood. That is, the analyses presented in Chapters 3 and 4 have revealed *patterns of relationships among concepts*. However, they have not described *patterns of behaviour*

among respondents. To understand community participation in a more rounded way, it is valuable to know something about the habitual, or patterned, ways in which people participate in their communities. It is therefore useful to employ statistical methods that can classify respondents into types (Bosworth, 1997) based on their patterns of behaviour according to a given set of variables, such as scores on domains of participation. Cluster analysis is an appropriate analytic method for achieving this goal in studies in which mental health is a focus (Adlaf & Zdanowicz 1999).

BENEFITS OF CLUSTER ANALYTIC METHODS

There are three broad benefits of conducting a cluster analysis on these data. Firstly, classifying respondents into types may enrich understanding of community participation, and of how it finds expression in different kinds of people. This may be achieved because clustering techniques can simplify complex data, find patterns in multifaceted phenomena, identify how types of people are similar and dissimilar, and assist in developing hypotheses about which factors might be causally related (Adlaf & Zdanowicz 1999). In that it proposes a taxonomy, at the very least, classifying respondents may make a contribution to the systematic classification of diseases, or nosology. Even if the types are not “real”, and do not reflect actual groupings of people in a community, this is still an interesting and useful procedure in terms of developing new research hypotheses for classifying mental disorders. Indeed, respondent-centred studies using cluster analysis have been successfully employed in psychiatric nosology (Beitchman et al 2001), or found to be directly relevant to it (Rubin & Panzano 2002).

Secondly, it is important to employ a variety of methods in analysing a data set. This is because different analytic techniques are suited to different types of research questions, and using a variety of techniques means a range of questions can be addressed and findings evaluated. In addition, it is respectful to respondents to analyse thoroughly the data they have provided, because they have gone to some trouble to provide it.

Finally, using analytic techniques, such as cluster analysis, that can group people into types can help further the general aims of psychiatric epidemiology. These aims include shedding light on which people develop mental health problems, and why. A common additional motivation behind psychiatric epidemiology is to inform the development of preventative interventions or treatments for mental health problems. Using analytic techniques that present a holistic perspective on people, taking account of a wide array of relevant factors, can assist in understanding why some people develop mental health problems, and also help determine what might assist in preventing or treating their problems (Rubin & Panzano 2002). As we saw in Chapter 1, economic, educational, and work status all had a separate bearing on rates of psychiatric problems in “The Road”, as reported in the Stirling County studies (Leighton et al 1962). But to understand the dynamics of *how* factors within the social environment could lead to the development of mental health problems, the ways in which these factors operated together, as a system, had to be considered. Some examples of how cluster analysis has been used to achieve this scientific goal are presented to illustrate this point.

Studies that have used cluster analysis

Cluster analysis is most commonly used in the biological sciences in which, based on the assumption that there are “natural” groupings of living organisms, forming classification systems is a common research goal (eg., Real et al 1997). While cluster analysis is not commonly used in psychiatric epidemiology, there are research situations in which its use is established. As in the present study, these almost always pertain to situations in which it is desirable to divide a large heterogeneous set of people into smaller, more homogenous sub-groups, in order to better understand differences in people’s mental health status (Beitchman et al 2001). Typical examples include categorising people with different levels and types of mental health experiences, such as clients of hospital psychiatric services (Song & Singer 2001), sub-types of community members with depression (Tylee 2001, Tylee et al 1999), or women with contrasting mental health experiences (Eggleston et al 2001). Sometimes, the carers of people with mental health problems are the focus of the research, such as mothers of children with challenging behaviours (McKay et al 2002).

Using cluster analyses to enhance understanding of populations of interest

Occasionally, cluster analysis is used simply to show that there are categories of people within a field of interest, such as distinct types of adolescents within a larger group of adolescents with behaviour problems (Chung & Elias 1996), or sub-groups among school-age students engaging in drink-driving (Stoduto & Adlaf 2001). That is, the 556 adolescents in the study by Chung & Elias could be distinguished from one another based on different levels and patterns of self-efficacy, participation in extra-curricular activities at school, and life events, while the students in the study by Stoduto and Adlaf could be broken down into three types. These types, “marginals”, “heavy drinkers”, and “delinquents” differed in their levels of a range of relevant factors, such as conduct disordered behaviour, use of alcohol, how often they drove having used alcohol, how many motor vehicle accidents they had had, and how experienced they were as drivers. While these studies were not specifically designed with a view to implementing drink-driving prevention programs, or addressing adolescent behaviour problems, there were obvious practical implications of the findings.

Using cluster analyses to inform policy development or service delivery

More often, therefore, cluster analysis is used to generate typologies, or profiles, for the express purpose of improving the design and delivery of services and interventions (Adlaf & Zdanowicz 1999). This goal is particularly relevant when the service recipients have complicated needs or characteristics (Beitchman et al 2001). Three studies are reviewed here to illustrate how the findings from cluster analyses may be applied in practice.

In a study of 1,840 young people convicted of criminal offences in the American state of Washington, cluster analysis was used to explore the youths' different mental health profiles with a view to better addressing their problems and, ultimately, reducing recidivism (Stewart & Trupin 2003). The cluster analysis conducted for this study gave support to the authors' hypothesis that there would be three distinct sub-groups among the offenders. These sub-groups were juveniles with high levels of mental health symptomatology, those with comorbid

mental health symptomatology and substance misuse, and those with low levels of mental health symptomatology.

In a Canadian study of homeless youth, cluster analysis was used to challenge the conventional view that young homeless people could be considered a more or less homogenous group (Adlaf & Zdanowicz 1999). In the study, the authors used cluster analysis to classify 211 young homeless people into eight distinct types based on their symptomatology on a range of mental health disorders, such as psychotic thoughts, substance misuse, and attempted suicide, and on a set of other relevant factors determined from the literature and discussion with practitioners. These included factors such as family dysfunction, history of abuse, prostitution, and street “entrenchment” (the degree to which the young person was embedded in street culture). The eight types were named “entrepreneurs”, “drifters”, “partiers”, “retreatists”, “fringers”, “transcenders”, “vulnerables”, and “sex workers”. Though the numbers of participants in some groups were very small, the authors obtained meaningful differences between the clusters on the full range of mental health and other factors. These were important both in terms of refuting the hypothesis that street youths formed a largely homogenous group, and in terms of presenting more accurate and detailed information about these young people. Of particular value, the findings of the study contributed to reviewing approaches to service development and delivery.

Finally, in a study of “several thousand” people with severe mental health problems living in Ohio, America, cluster analysis was used to classify service recipients from seven different samples (Ns ranged from 346 to 744) into five “core clusters” or “prototypes” (Rubin & Panzano 2002). These were based on a broad array of characteristics, including mental health characteristics, together with a range of social and other relevant factors derived from the literature and from extensive consultative processes involving service recipients, carers, researchers and service delivery staff. Like the study of Canadian street youths, the cluster analysis of mental health service recipients in Ohio drew attention to the considerable heterogeneity among participants.

AIMS OF THIS CHAPTER

A general aim of this chapter is to report on whether respondents can be grouped in a statistically sound, meaningful and scientifically useful way into types based on their patterns of participation. A second general aim is to prepare preliminary profiles, or “pen-portraits”, to describe the characteristics of different types of respondents in terms of patterns of participation. Such profiles could be used in the form of categorical data in later analyses. With regard to the specific goals of this chapter, it has been proposed that some people could be described as “machers” and others as “schmoozers” (Chapter 1, Hypothesis 6). These are not types of community participation but, rather, types of people characterised by the nature of their participation. A specific aim of this cluster analysis, therefore, is to evaluate this hypothesis. A second specific aim of the cluster analysis is to evaluate, with a view to enriching the profiles, the appropriateness of including variables in the analysis other than levels of participation, such as sex and generation. This last aim raises a key issue in cluster analysing, which pertains to the selection of variables to be used in the analysis.

STATISTICAL METHODS

Cluster analysis is a generic name given to a set of techniques that analyse associations between respondents rather than between variables (Diekhoff 1992: pp.360-375). Respondents are assigned to classes by creating a taxonomy based on selected respondent characteristics, such as, in this case, degree of involvement in different domains of participation. The result of such an analysis is that a set of profiles of different types of people can be developed, highlighting the characteristics they share as well as the ways in which they differ. These profiles can be of interest in their own right and can also be used as categorical variables in other analyses (Stewart & Trupin 2003). That is, they can be thought of as sub-groups within a population and used in analyses intended to find out about the experiences of different types of people, so that their psychiatric profiles, needs, and possible preventative measures or treatments, might be better understood.

Selecting variables for cluster analyses

The aim of a cluster analysis, therefore, is to propose a set of categories described in terms of their *defining features*. An important goal of such an analysis is to reveal how categories *differ* from each other, as well as how they are similar (Adlaf & Zdanowicz 1999). It is thus important in conducting a cluster analysis to decide which variables would be relevant to the analysis from the perspective of discriminating between different types of respondents. Some variables might be interesting, but might not help distinguish categories. These variables would not be included in a cluster analysis. Instead, they would be analysed later, using other techniques, such as examining significant differences among distributions of categorical variables between clusters, or significantly different mean scores for continuous variables between clusters. Differences between clusters based on the distributions of variables not used in the cluster analysis are particularly informative in evaluating the validity of the cluster solution (Beitchman et al 2001, Stewart & Trupin 2003).

VARIABLES INCLUDED IN THE PRESENT ANALYSIS

In the present study, an aim was to describe categories of respondents in terms of their patterns of community participation. It has been proposed, based on first-order factor analyses, that there are fourteen distinct ways (called “domains of participation”) in which people can participate in their communities. It was therefore relevant to include all of them in a cluster analysis intended to distinguish among respondents based on their patterns of participation. In addition, it is appropriate to review other variables that are associated with levels of participation and that might also be suitable for inclusion in the analysis.

Sex and generation

In Chapter 1, it was hypothesised that women would participate in their community more than would men, and that older generations would participate more than would younger generations (Hypotheses # and #). Descriptive statistics presented in Chapter 3 highlighted statistically significant differences between women and men and three generations of respondents in levels of participation in some domains, suggesting some support for these hypotheses. Sex and

generation were therefore relevant variables to include in a cluster analysis aimed at revealing patterns of participation, especially as they are of theoretical importance (eg, Putnam, 2000).

Other factors associated with levels of participation

A range of other factors has been shown to be associated with people's patterns of participation in their communities. A recent South Australian general population cross-sectional study of community participation has proposed that there is a variety of forms of participation in the community (Baum et al 2000). They were informal social participation (such as visiting family, friends or neighbours), participation in public spaces (such as going to a coffee shop or cinema), group activities (such as playing sport or being in a choir), individual civic activities (such as signing a petition or writing to a newspaper), group civic activities (such as being in a union or action group), and group participation in a mix of social and civic activities (such as volunteering or going to church). The study evaluated the relationships of socio-demographic factors to each of these forms of participation. The socio-demographic factors included sex, age, educational level, household income, and social isolation. All of these factors were significantly statistically associated with most forms of participation. Consistent with patterns of participation in America (Putnam 2000), Baum and her colleagues found that levels of participation varied among different sub-groups of the sample. For example, women visited family members more often than did men, and older people spent more time with neighbours. Younger people participated in public spaces more than did older people, and the most highly educated people participated in collective civic activities more than did those with less education.

Thus levels of community participation have been linked to a variety of socio-demographic variables, and it would be appropriate to examine their relationships with levels of participation with respect to different types of people. It was therefore appropriate in this study to examine the distributions of a set of socio-demographic variables among the clusters as an adjunct to the cluster analyses. Chi-squared analyses of the distributions among the clusters of levels of education, ethnicity, living alone, having dependents, and paid work/study status were therefore performed, and the results of these are reported later in the chapter.

TWO CLUSTER ANALYSES WERE REQUIRED

Given that there were two substantively reasonable ways to approach selecting variables for a cluster analysis (participation variables alone, or participation variables together with sex and generation), two cluster analyses were conducted and their results compared according to a set of evaluation criteria (which are described later). The first cluster analysis was based on the fourteen domains of participation on their own and was intended to add to the investigation of participation as a concept independent of any other factors. It was an adjunct to the analyses presented in Chapters 3 and 4. The second cluster analysis, which was conducted on the domains of participation together with sex and generation, was intended to explore the possibility of adding depth to any typology derived from the analysis based on domains of participation alone.

TECHNICAL ISSUES IN CLUSTER ANALYSIS

Methods of calculating distances

Cluster analysis is based on *proximities* between *elements*. In this case, “proximities” are the closeness of individual respondents’ scores on each domain of participation. “Elements” are respondents. Proximities can be calculated in various ways and, in practice, this often involves calculating distances as a means of inferring proximity. Distances are differences between respondents, taking simultaneous account of their scores on all variables. Thus the simplest and most common ways of calculating proximities are Euclidean distances and squared Euclidean distances (lower distances imply greater proximity). Euclidean distances are defined as $\text{distance}(x,y) = \{\sum_i (x_i - y_i)^2\}^{1/2}$. Squared Euclidean distances are defined as $\text{distance}(x,y) = \sum_i (x_i - y_i)^2$. Thus Euclidean metrics, which are suitable for use with any approach to clustering (Lance & Williams 1967), take account not just of the relative proximity between scores but also of their absolute proximities. This is particularly useful in analysing continuous data measured on equivalent scales, such as the domains of participation in this study.

However, Euclidean metrics cannot be used when categorical data are included in the analysis. In this case, log-likelihood distances have to be calculated. Log-likelihood distances place a probability distribution on each variable. That is, unlike for Euclidean metrics, probability estimates rather than actual distances are calculated. The distances between clusters are amplified because log-likelihood distances progressively weight elements (respondents) that are further apart. This makes distinctions between categories more stark, aiding interpretation, and is particularly useful in examining the effects of categorical data included in the analysis. Log-likelihood distances are also appropriate for use with interval data alone. Thus, though this is a less common method of calculating distances, it is appropriate when using interval data alone (such as scores on domains of participation), and is essential when combining interval data and categorical data (such as generation or sex), as is the case in this study. This introduces an additional but related issue of whether to use raw data or standardised scores for these analyses.

Using standardised scores

In cluster analyses based on Euclidean distances, raw data are usually used. However, sometimes the variances of scores on the descriptor variables differ substantially. When this happens, variables with larger variances contribute disproportionately to the distance calculations, giving them emphasis. This emphasis is not always unwarranted, in that it may be appropriate for some variables to contribute disproportionately to the distance calculations. But if such emphasis is unwarranted, standardised scores may be used.

As we have seen, when categorical data are included in the analysis, it is necessary to calculate log-likelihood rather than Euclidean distances. These are always based on standardised scores. In this study, therefore, it was appropriate to base all analyses on standardised scores, and z-scores were computed

Approaches to creating clusters

The most commonly used clustering technique, agglomerative clustering, begins with individual respondents and combines individuals, according to the proximity of their scores on all the variables in the analysis, into groups, or “clusters” of two or more. These tiny clusters

are progressively combined into bigger clusters by locating other clusters containing respondents with very similar data. In practice, in a study with a large sample, such as this, there would be pre-existing “clusters” in the sense that there would exist in the data set a number of individuals with identical or very similar data. The first iteration would therefore likely generate quite large groupings.

There are various ways of determining proximity between clusters. These are based on the centroids within each cluster, which themselves can be calculated in various ways. The centroid can be interpreted as a mean score in multidimensional space. Either whole clusters, or individual respondents, may be added to a cluster at any stage in the process. As they grow, the clusters become more heterogeneous until finally all cases are included in one large cluster.

“Divisive clustering”, the opposite of agglomerative clustering, is less commonly used but follows the same principle. In this case, the starting point is one large cluster of all respondents, and this is progressively divided into smaller groups. Since the purpose of clustering is to generate reasonably homogenous groups from a large heterogeneous group, a decision has to be made about when to stop combining or dividing clusters.

Evaluation criteria

Various criteria are used to generate this decision. As with many exploratory or descriptive techniques, the two most important criteria were (a) meaningfulness and scientific usefulness, and (b) parsimony (the fewest number of clusters are used to produce a meaningful and statistically acceptable solution). A meaningful and scientifically useful solution is one that is interpretable and that makes sense theoretically, or in terms of what is known or hypothesised within the field of research. A solution may also be evaluated, based on the “agglomeration schedule”, in terms of its statistical acceptability. This combination of substantive and statistical criteria, with the substantive criteria emphasised, is essential to the sound evaluation of cluster solutions in psychiatric epidemiology (Beitchman et al 2001).

The agglomeration schedule is a calibration of the distance between elements within each cluster as the agglomeration or division proceeds. This is useful information because, in agglomerative clustering, as clusters are progressively combined, the average distance between elements grows slightly. When agglomeration reaches a point at which quite dissimilar elements are combined, the average distance between elements jumps sharply. At this stage, the agglomeration has progressed one step too far to represent the data adequately and the preceding number of clusters will be the smallest number of clusters to which the elements can be adequately reduced. The same process in reverse applies to divisive clustering. Division continues until it reaches a point at which quite similar elements have been divided. Two commonly used agglomeration schedules are Schwarz's Bayesian Criterion and Akaike's Information Criterion. Both were used and the results compared.

Finally, a ratio of change from one step to the next in the clustering process may be calculated based on the agglomeration schedule. The ratio of change is the ratio of the start value of the criterion statistic to the criterion statistic at any particular point in the agglomeration or division process. It is not always obvious from the absolute values on the agglomeration schedule at which point agglomeration or division has progressed one step too far. The ratio of change from one step to the next makes this clearer, and this ratio has therefore been reported.

Methods of clustering

There are various methods of clustering, most suited to small samples or exclusively to interval or categorical data. One method, two-step clustering, is able to simultaneously analyse continuous and categorical data and is suited to large data sets, both of which are the case in this study. In the first step of a two-step clustering procedure, the pre-cluster stage, respondents are assigned to locations on a "cluster feature tree". These locations are determined according to respondents' distances from all other respondents based on a multinomial distribution placed simultaneously on all variables. In the second step, an algorithm (in this case, the Akaike Information Criterion or Schwarz's Bayesian Criterion) is used to determine the most appropriate number of clusters into which to group respondents based on

where they are located in the tree. The researcher may specify the number of clusters that are required, or may select the number of clusters post hoc based on statistical and other evaluation criteria.

Two-step clustering has the additional benefit of being robust to violations of the assumptions of normality of distribution and independence of variables, which the data did not fully meet. As has been shown in Chapters 3 and 4, the distributions of participants' scores on some domains of participation were skewed, and some domains of participation were significantly correlated. The two-step clustering approach was therefore selected because it was appropriate for the characteristics of this data set and would suit both cluster analyses being attempted in the present study, one of which included categorical data.

Summary of techniques used in this study

Two-step clustering was employed for this cluster analysis. Proximities were calculated using log-likelihood distances because these are suited both to analyses based on interval data alone (such as scores on domains of participation), and also for analyses based on mixed continuous and categorical data (such as scores on domains of participation, and the socio-demographic variables, sex and generation). Because log-likelihood distances were calculated, clustering was based on standardised scores. The most important evaluation criteria were (a) meaningfulness and scientific usefulness and (b) parsimony. An additional criterion was change in the agglomeration schedule. Two bases for determining change in the agglomeration schedule were compared, Schwarz's Bayesian Criterion and Akaike's Information Criterion. To assist in determining an appropriate cut-off in the agglomeration schedule for the number of clusters, the ratio of change in the agglomeration schedule from step to step in the clustering process was calculated.

EVALUATING SOLUTIONS

The results of the cluster analyses based solely on domains of community participation are summarised in Table 5.1, while Table 5.2 presents the results of the cluster analyses based on domains of community participation together with sex and generation. In presenting the

results of the agglomeration process, statistics for the first fifteen steps have been reported, enough to show the results of the analysis clearly. This is an arbitrary number of steps to show, and fewer, or more, could have been reported.

A two-cluster solution based on domains of participation alone

For both methods of calculating agglomeration schedules using the domains of participation only, the ratio of change indicated a clear cut-off between two and three clusters, indicating a two-cluster solution. Inspection of the centroids for both clusters clearly revealed a group of high-participants (N=553, 57.4%) and a somewhat smaller group of low-participants (N=410, 42.6%). As Table 5.3 shows, centroid scores for all domains of participation, with the exception of contact with household members, were higher for the high-participant cluster. The two clusters differed in terms of the distributions of women and men, and the three generations, between them, consistent with Hypotheses 11 and 12 (see Chapter 1). The high-participant group had more women than men ($\chi^2=8.61, df=1, p=.003$), while women and men were equally represented in the low-participant group ($\chi^2=2.50, df=1, p=.114$). The high-participant group also had an over-representation of older generations ($\chi^2=24.03, df=2, p<.000$), while all generations were evenly represented in the low-participant group ($\chi^2=2.64, df=2, p=.267$).

Table 5.1. Agglomeration schedules for a cluster analysis based on domains of participation using Schwarz's Bayesian Criterion and Akaike's Information Criterion (line indicates proposed cut-off).

Number of clusters	Schwarz's Bayesian Criterion		Akaike's Information Criterion	
	Criterion statistic	Ratio of change	Criterion statistic	Ratio of change
1	9530.37		9786.01	
2	8830.78	1.00	8922.06	1.00
3	8631.00	.29	8557.91	.42
4	8484.61	.21	8247.16	.36
5	8395.45	.13	7993.64	.29
6	8334.93	.09	7768.77	.26
7	8346.59	-.02	7616.06	.18
8	8379.37	-.05	7484.48	.15
9	8421.27	-.06	7362.02	.14
10	8472.22	-.07	7248.61	.13
11	8546.58	-.11	7158.60	.10
12	8630.92	-.12	7078.58	.09
13	8720.77	-.13	7004.07	.09
14	8817.18	-.14	6936.12	.08
15	8915.05	-.14	6869.62	.08

Table 5.2. Agglomeration schedules for a cluster analysis based on domains of participation, together with sex and generation, using Schwarz's Bayesian Criterion and Akaike's Information Criterion (line indicates proposed cut-off).

Number of clusters	Schwarz's Bayesian Criterion		Akaike's Information Criterion	
	Criterion statistic	Ratio of change	Criterion statistic	Ratio of change
1	12982.10	1.00	13265.12	1.00
2	11808.84	.56	11909.90	.62
3	11156.70	.44	11075.79	.51
4	10644.58	.27	10381.69	.37
5	10326.26	.23	9881.40	.33
6	10059.34	.13	9432.51	.25
7	9909.20	.02	9100.39	.15
8	9888.13	-.05	8897.35	.09
9	9949.72	-.06	8776.97	.08
10	10024.83	-.07	8670.11	.08
11	10103.79	-.08	8567.10	.07
12	10192.31	-.10	8473.65	.04
13	10313.62	-.10	8412.99	.04
14	10435.98	-.11	8353.38	.04
15	10568.26	1.00	8303.69	1.00

Table 5.3. Cluster centroids and standard deviations for fourteen domains of community participation.

Domain of participation	Cluster 1		Cluster 2	
	Mean	Standard deviation	Mean	Standard deviation
Contact with household members	5.30	2.20	5.65	1.98
Contact with extended family	3.85	1.34	4.24*	1.30
Contact with friends	3.96	1.32	4.88*	1.18
Contact with neighbours	3.30	1.52	4.14*	1.54
Social contact with workmates	2.01	1.38	2.47*	1.65
Ongoing informal learning	1.59	.92	2.58*	1.44
Religious observance	1.55	1.02	2.64*	1.93
Organised community activities	2.44	1.74	4.37*	1.95
Voluntary sector activity	1.73	1.10	3.65*	1.85
Giving money to charity	4.03	1.23	4.95*	1.23
Active interest in current affairs	5.17	1.23	5.92*	.91
Expressing opinions publicly	1.29	.56	2.42*	1.39
Community activism	1.09	.20	1.74*	.98
Political protest	1.26	.45	2.24*	1.22

* Centroid score for Cluster 2 is significantly higher than centroid score for Cluster 1 at $p < .05$.

With respect to the evaluation criteria, and to the hypotheses of this study, this solution is clearly meaningful and scientifically useful. That is, it makes sense to describe people as high-participants or low-participants, and suggests support for the hypothesis that some people are high participants and others are low participants. From the point of view of parsimony, a two-cluster solution is exceptionally parsimonious, and therefore meets the parsimony criterion. However, this solution may not reflect the diversity of experience found between the sexes and between the different generations of Australians that the descriptive statistics presented in Chapter 3 suggest are present. That is, it might be expected that communities contain more than two types of person with regard to patterns of participation, and that a two-cluster solution might not fully capture the heterogeneity of the population. The clusters might thus be rather too broad to permit an informative examination of participation in terms of types of people. A final decision on this matter would need to be based on further analysis, including an analysis of a cluster solution based on domains of participation together with relevant socio-demographic variables.

A seven-cluster solution based on domains of participation, and sex and generation

As Table 5.2 shows, using the domains of participation together with sex and generation, the ratio of change in the agglomeration schedules indicated cut-offs at seven clusters. In order to be able to comment on this solution in terms of the criterion of meaningfulness and scientific value, it was first necessary to attempt to interpret the clusters. This was not quite the straightforward matter that it was for the two-cluster solution, and commentary on how to interpret the seven-cluster solution is presented in the following sections. In terms of parsimony, reducing a data-set of N=963 to seven fairly homogenous categories seems reasonable, and is broadly consistent with the results of other cluster analyses, as reviewed earlier in this Chapter. From the point of view of scientific usefulness, a seven-cluster solution would be likely to permit a more informative analysis of respondents in terms of patterns of participation than would a two-cluster solution. But, again, this decision could be made until after the clusters had been interpreted.

Distribution of sex and generation among seven clusters

The seven clusters included one very small category (N=84) and six larger categories (N ranged from 110 to 182). As Table 5.4 shows, all seven clusters differed from each other with respect to sex and generation, except for cluster 2. That is, there was a cluster for Generation X women, one for Generation X men, one for Baby Boomer women, one for Baby Boomer men, one for Long Civic women, and one for Long Civic men. There were no exceptions to the sex/generation distributions of respondents within these six groupings. One cluster, the smallest one, had roughly even numbers of women and men, and contained members from each of the three generations.

Table 5.4. Numbers of respondents in each cluster by sex and generation.

Cluster	Total N in each cluster	<u>Generation</u>			<u>Sex</u>	
		Generation X	Baby Boomers	Long Civics	Female	Male
1	110	110	0	0	0	110
2	84	11	27	46	37	47
3	140	140	0	0	140	0
4	151	0	0	151	0	151
5	155	0	155	0	0	155
6	182	0	182	0	182	0
7	141	0	0	141	141	0
Totals	963	261	364	338	500	463

Seven clusters in terms of community participation: preliminary profiles

Inspection of the centroids for each cluster for the domains of community participation revealed differences in levels of participation among the clusters. These are described in turn below. The six clusters whose members were defined without exception by their sex and generation have been named accordingly. Cluster 2, which was not defined by sex and generation, is considered last. Centroid scores and standard deviations for each domain of participation for each type are presented in Table 5.5.

Table 5.5. Cluster centroids²⁰ and standard deviations for fourteen domains of community participation.

	Cluster 1		Cluster 2		Cluster 3		Cluster 4		Cluster 5		Cluster 6		Cluster 7	
	Centroid	S _x	Centroid	S _x	Centroid	S _x	Centroid	S _x	Centroid	S _x	Centroid	S _x	Centroid	S _x
Contact with household members	5.62	1.79	4.96	2.38	5.78	1.74	5.24	2.45	5.38	2.05	6.13*	1.39	4.75#	2.60
Contact with extended family	3.83	1.39	4.34	1.40	4.29	1.42	3.77	1.27	3.60#	1.22	4.04	1.29	4.43*	1.23
Contact with friends	4.22	1.33	5.14*	1.09	4.58	1.33	4.03#	1.25	3.88#	1.22	4.33	1.47	4.81*	1.17
Contact with neighbours	3.26	1.59	4.36*	1.49	3.36	1.65	3.89	1.45	3.30#	1.42	3.67	1.62	4.09*	1.57
Social contact with workmates	3.41*	1.58	2.45	1.70	2.83*	1.61	1.14#	.43	2.55*	1.36	2.37	1.56	1.15#	.48
Ongoing informal learning	1.86	1.24	2.90*	1.48	2.26	1.30	1.43#	.85	1.75#	.98	2.42*	1.42	1.88	1.20
Religious observance	1.42#	.88	3.09*	1.99	1.94	1.51	1.88	1.46	1.64#	1.18	2.14	1.71	2.45	1.79
Organised community activities	2.90	2.15	4.58*	1.76	3.12	2.04	3.16	1.98	3.09	1.97	3.39	2.14	3.36	2.07
Voluntary sector activity	1.81#	1.14	4.87*	1.60	2.17#	1.43	2.27	1.63	2.40	1.57	2.62	1.71	2.81	1.86
Giving money to charity	4.03#	1.39	5.11*	1.30	4.50	1.31	4.29	1.25	4.21	1.23	4.46	1.28	4.72	1.28
Active interest in current affairs	5.17#	1.17	6.23*	.73	5.11#	1.19	5.71	.99	5.50	1.09	5.31	1.36	5.77*	.97
Expressing opinions publicly	1.38#	.70	3.98*	1.55	1.48#	.83	1.66	.98	1.68	.88	1.69	.90	1.57#	.84
Community activism	1.16#	.31	3.19*	1.20	1.16#	.31	1.21#	.33	1.29	.48	1.22#	.39	1.20#	.31
Political protest	1.50	.80	3.32*	1.41	1.48#	.70	1.40#	.67	1.80	.99	1.67	.92	1.34#	.54

²⁰ Bold type-face indicates centroid is significantly higher (*) or lower (#) than sample mean (p<.05).

Patterns of participation among Generation X men

Members of Cluster 1, Generation X men, showed very high levels of social contact with workmates. They reported lower than average levels of participation in religious observance, voluntary sector activity, giving money to charity, active interest in current affairs, expressing opinions publicly, and community activism. They reported average levels of community participation across the remaining domains. Their levels of participation (ordered from private to public) for each domain are illustrated in Figure 5.1.

In terms of the super-domains of participation, Generation X men reported high levels of contact with workmates, average levels of informal social connectedness, and low levels of civic engagement and political participation. In terms of the dimensions of participation, Generation X men emphasised those activities that are subject to a sense of obligation (workmates), and under-emphasised those domains of participation in which people participate out of choice, and that are part of the public dimension of participation.

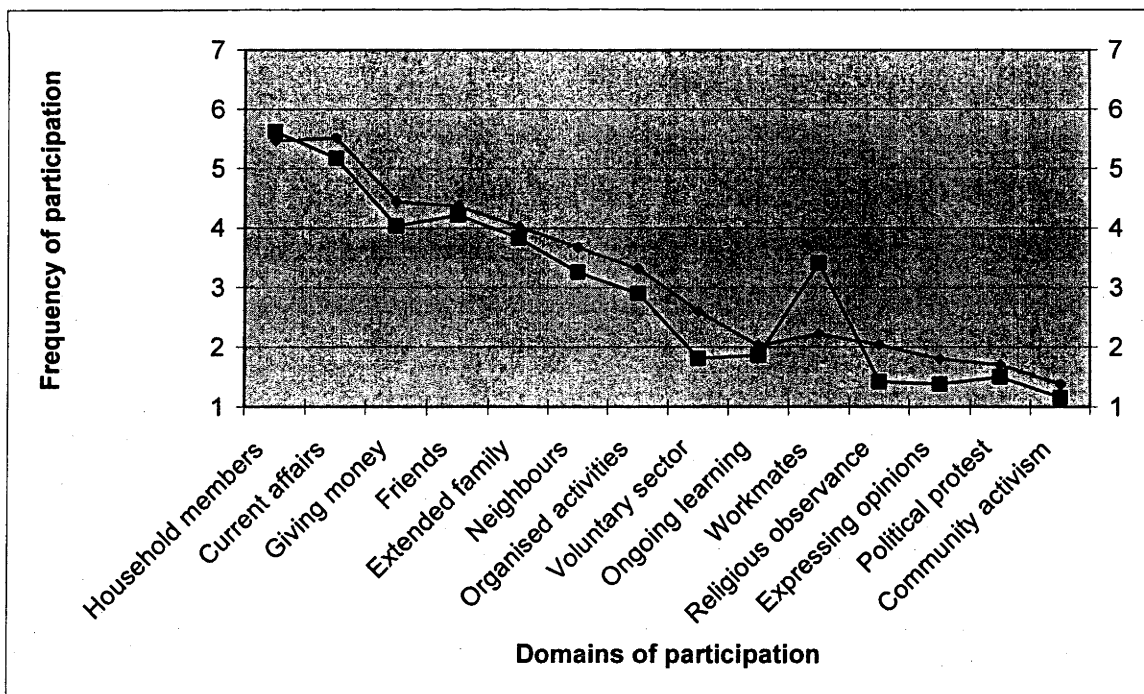


Figure 5.1. Centroid scores for domains of participation for Generation X men (heavy line) compared with mean scores for the whole sample (faint line).

Patterns of participation among Generation X women

Levels of participation for members of Cluster 3, Generation X women are illustrated in Figure 5.2. Generation X women showed high levels of social contact with workmates, but not as high as Generation X men.

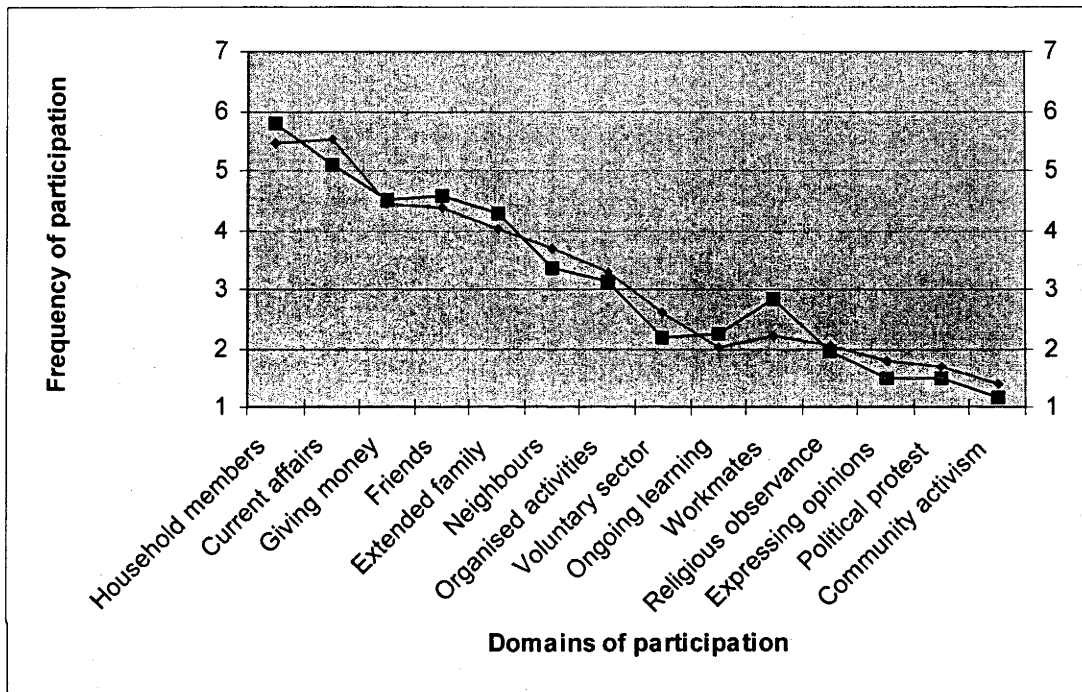


Figure 5.2. Centroid scores for domains of participation for Generation X women (heavy line) compared with mean scores for the whole sample (faint line).

Like their male peers, they were low participators, reporting lower than average levels of participation in voluntary sector activity, active interest in current affairs, expressing opinions publicly, community activism, and political participation. In terms of the super-domains of participation, Generation X women covered a wider range of types of participation than Generation X men. That is, they reported high levels of contact with workmates, average levels of informal social connectedness, average levels (rather than low levels) of most domains of civic engagement, and low levels of and political participation. In terms of the dimensions of participation, Generation X women emphasised those activities that are subject to a sense of obligation (workmates), and under-emphasised those domains of participation that are part of the public dimension of community participation.

Patterns of participation among Baby Boomer men

As Figure 5.3 illustrates, members of Cluster 5, Baby Boomer men, showed high levels of social contact with workmates, though not as high as the Generation X men.

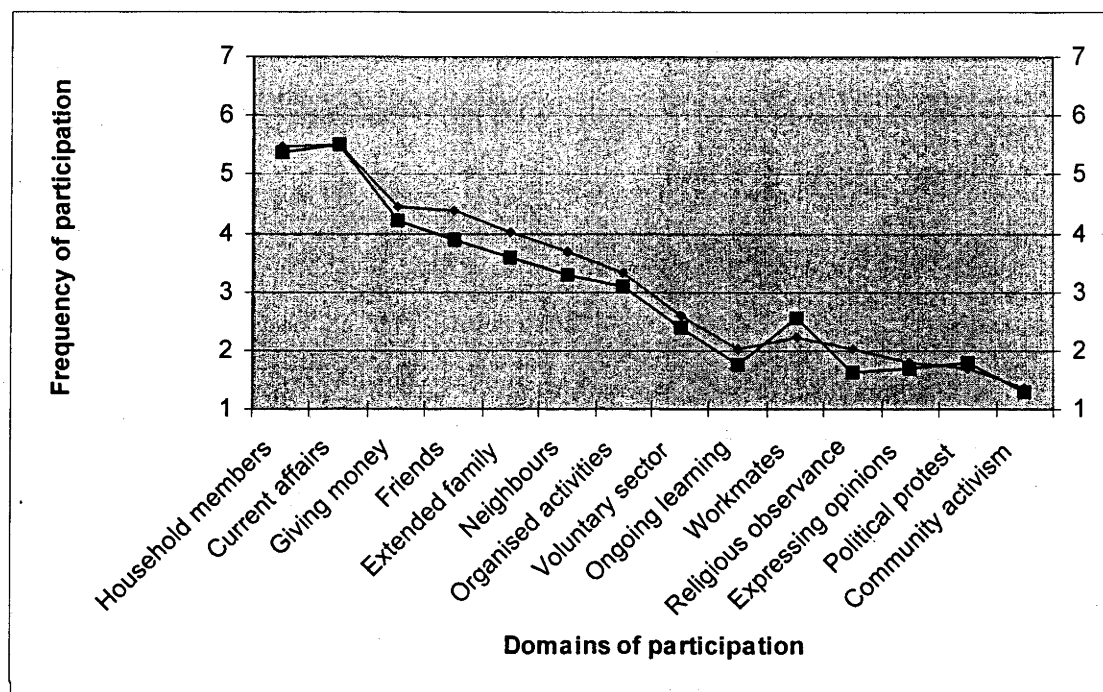


Figure 5.3. Centroid scores for domains of participation for Baby Boomer men (heavy line) compared with mean scores for the whole sample (faint line).

They reported lower than average levels of contact with extended family, contact with friends, contact with neighbours, ongoing informal learning, and religious observance.

They reported average levels of community participation across the remaining domains. In terms of the super-domains of participation, Baby Boomer men reported high levels of contact with workmates, average levels of political participation, average involvement in some domains civic engagement, and low levels of informal social connectedness. Thus, in terms of the dimensions of participation, Baby Boomer men emphasised those activities that are subject to a sense of obligation (workmates), and under-emphasised those domains of participation in which people participate out of choice, and that are part of private life.

Patterns of participation among Baby Boomer women

Members of Cluster 6, Baby Boomer women, were the only respondents that reported high levels of contact with household members, and were thus the highest participators of all the clusters in this domain. Figure 5.4 illustrates Baby Boomer women's level of contact with household members, and levels of participation for the other domains.

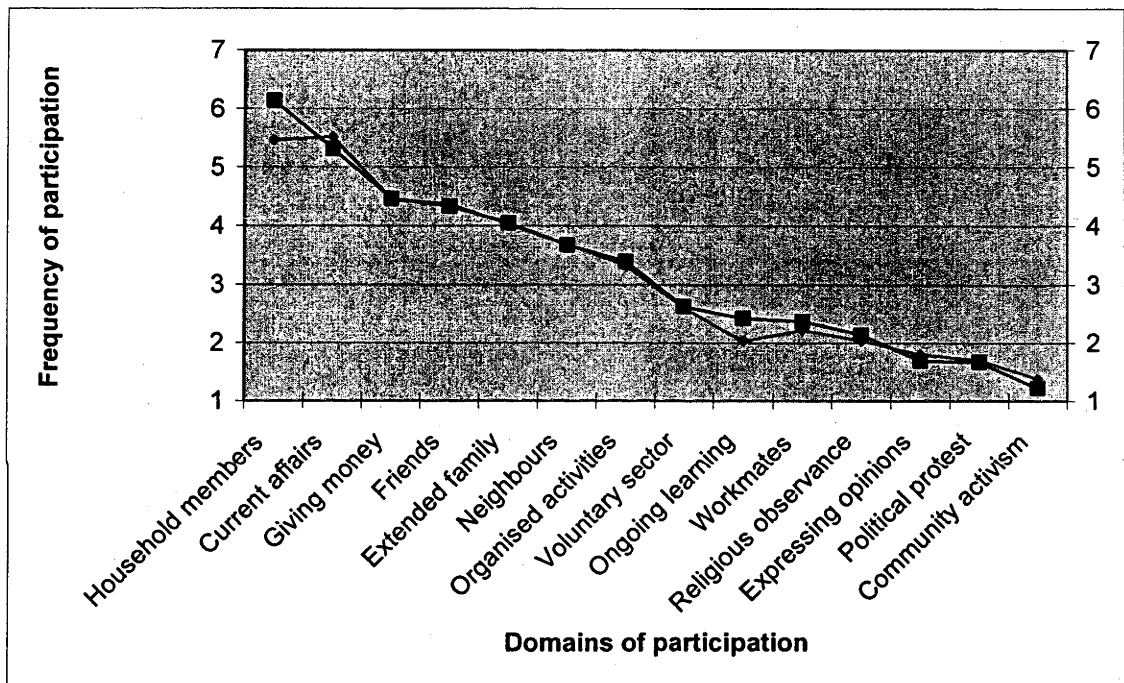


Figure 5.4. Centroid scores for domains of participation for Baby Boomer women (heavy line) compared with mean scores for the whole sample (faint line).

Baby Boomer women also reported high levels of ongoing informal learning. Baby Boomer women reported lower than average levels of participation in community activism, and average levels of participation across the remaining domains. In terms of the super-domains of participation, Baby Boomer women's patterns of participation did not emphasize, or under-emphasize, any particular kind of activity. In terms of the dimensions of participation, Baby Boomer women tended towards those activities that are subject to a sense of obligation, and that are part of private life (contact with household members).

Patterns of participation among Long Civic men

Figure 5.5 illustrates the patterns of participation among members of Cluster 4, Long Civic men, who did not report high levels of participation in any domain. Long Civic men reported lower than average levels of contact with friends, social contact with workmates, ongoing informal learning, community activism, and political protest. With low levels of participation spread evenly across all the super-domains of participation, Long Civic men under-emphasised community participation in general, but not any particular type of activity. Similarly, they did not emphasize, or under-emphasize, any particular dimension of community participation. However, with their low levels of contact with friends, it is worth noting that they reported an under-emphasis on the core domain of informal social connectedness, and of community participation in general.

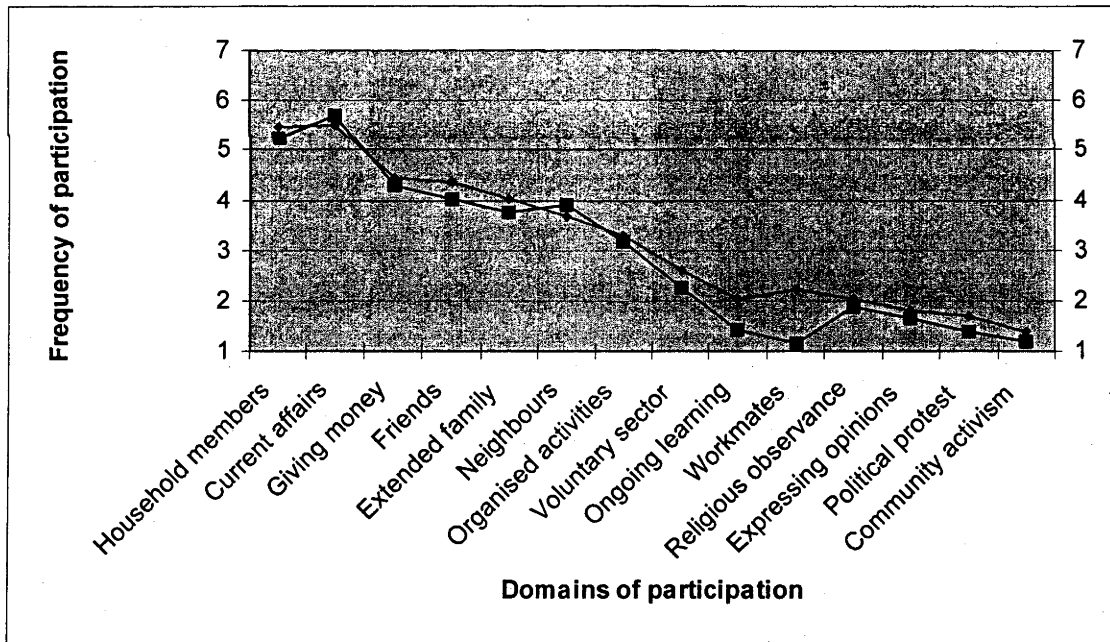


Figure 5.5

Centroid scores for domains of participation for Long Civic men (heavy line) compared with mean scores for the whole sample (faint line).

Patterns of participation among Long Civic women

Members of Cluster 7, Long Civic women, showed high levels of contact with extended family, friends, and neighbours, and high levels of active interest in current affairs, as illustrated in Figure 5.6.

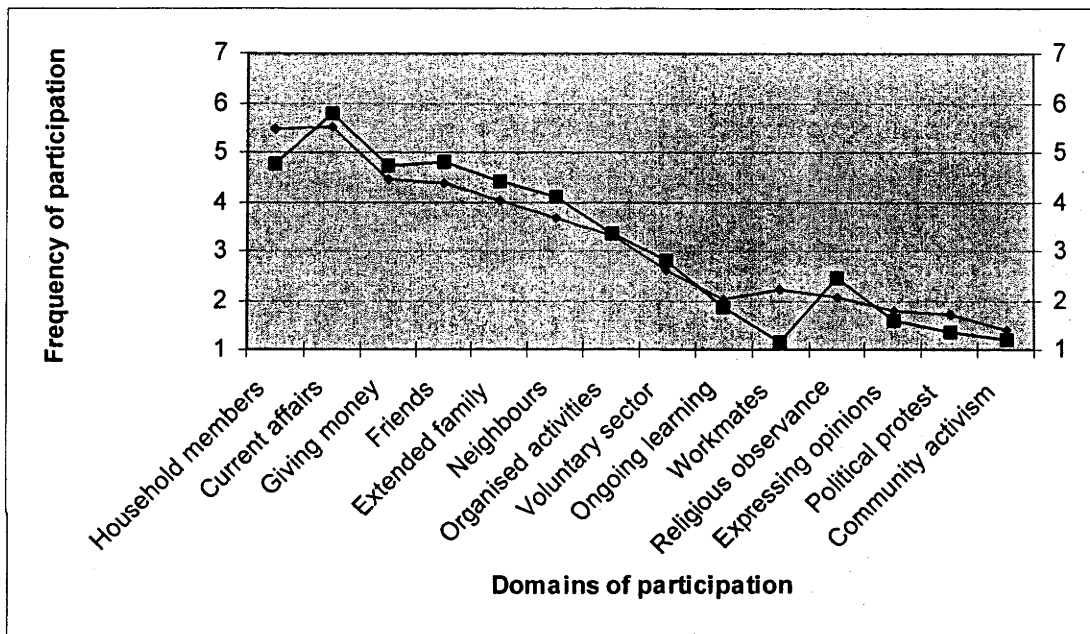


Figure 5.6. Centroid scores for domains of participation for Long Civic women (heavy line) compared with mean scores for the whole sample (faint line).

They reported lower than average levels of contact with household members, social contact with workmates, expressing opinions publicly, community activism, and political protest. In terms of the super-domains of participation, Long Civic women reported high levels of informal social connectedness, and low levels of political participation. They thus emphasised those activities in which people participate out of choice, and in their private lives, and under-emphasised those domains of participation that are subject to a sense of obligation, and that are part of the public dimension of community participation.

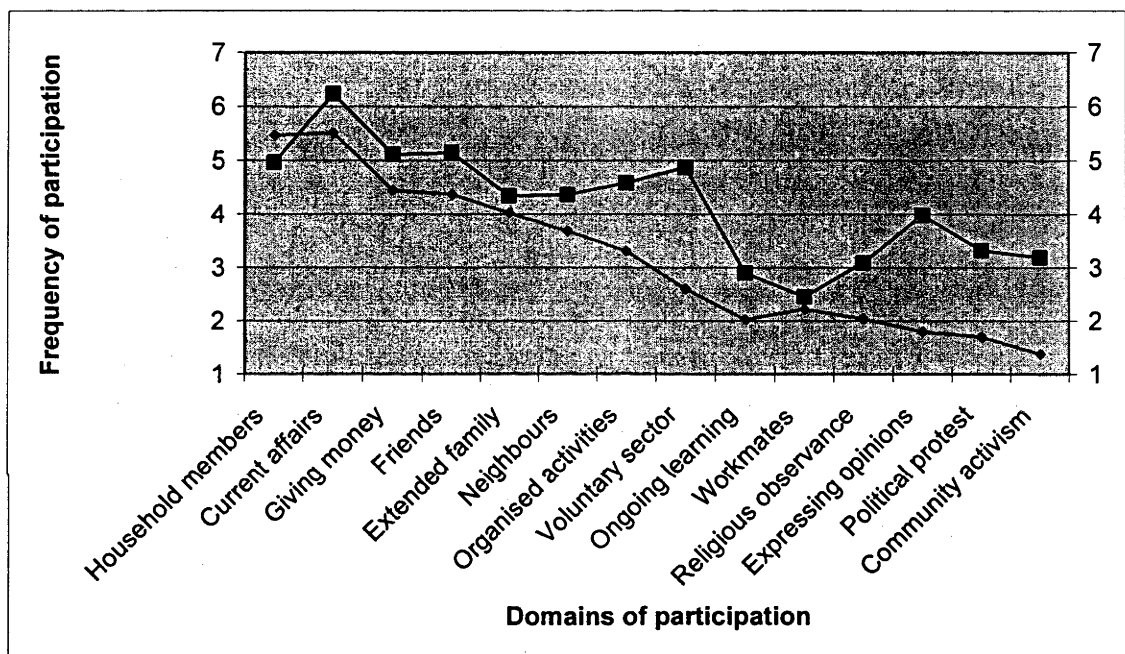
Patterns of participation among “elite connectors”

Members of Cluster 2 were not confined to a particular sex or generation grouping. With 37 women and 47 men, the cluster included equal numbers of women and men ($\chi^2=1.19$, $df=1$, $p=.275$). However, with 11 members of Generation X, 27 Baby Boomers, and 46 members of the Long Civic Generation, Generation Xers were under-represented and Long Civics were over-represented in the cluster ($\chi^2=21.93$, $df=2$, $p<.000$). Among the 11 Generation Xers, seven were men and four were women. There were 17 Baby Boomer men and ten Baby Boomer women. Among the members of the Long Civic Generation in this cluster, there were 23 men and 23 women.

Members of this cluster showed very high levels of active interest in current affairs, significantly higher than any other group. Those that were in paid work also reported very high levels of social contact with workmates ($M=3.37$, $S_x=1.69$), like the Generation X men. They reported high levels of contact with friends and with neighbours, and high levels of ongoing informal learning, religious observance, organised community activities, voluntary sector activity, giving money to charity, expressing opinions publicly, community activism, and political protest. They were the only cluster that reported high levels of organised community activities, voluntary sector activity, expressing opinions publicly, community activism, and political protest. There were no domains of participation in which cluster 2 members reported low levels of activity. Figure 5.7 illustrates the levels of participation of this cluster (but does not take account of the elevated levels of social contact with workmates found among those in paid work).

In terms of the super-domains of participation, therefore, cluster 2 members reported high levels of informal social connectedness, civic engagement, and political participation. They were the only group to report high levels of the latter two. In terms of the dimensions of participation, cluster 2 members emphasised those activities in which people participate out of choice. They also emphasised both private and public types of participation.

They did not under-emphasise domains at the obligation-based end of the choice-obligation dimension of participation. Indeed, those in paid work had high levels of social contact with workmates. Given their very high levels of participation, and their participation across all domains and both dimensions of participation, this cluster was tentatively named “elite connectors”.



Fig

ure 5.7. Centroid scores for domains of participation for elite connectors (heavy line) compared with mean scores for the whole sample (faint line).

Adding socio-demographic factors to the seven clusters: chi-squared analyses

Having explored the different patterns of volitional community participation among the seven clusters, it was appropriate to review the distribution of socio-demographic factors among them. Five socio-demographic factors were considered: level of education (high school or less; certificate, diploma or degree; or professional, or higher degree), ethnicity (Indigenous Australian; born overseas; or born in Australia), living alone (yes or no), having dependents

(yes or no), and paid work status (not in paid work; in part-time paid work; or in full-time paid work).

The results of the chi-squared analyses of distributions of categories among the clusters are presented in Table 5.6 (a) to (g). Global chi-squared statistics were significant for all socio-demographic factors. That is, the observed distribution of respondents differed significantly from expected values for at least one group for every factor.

To ascertain which groups deviated significantly from expected values, residuals were examined. Residuals are the difference between the observed and expected distribution of respondents between each group. The absolute magnitude of residuals may be inspected. However, these do not take account of standard deviations or standard errors. Standardised residuals, or "Pearson residuals", are the residual divided by an estimate of the standard deviation.

Standardised residuals have a mean of 0 and a standard deviation of 1. Adjusted standardised residuals are the residual divided by the standard error, and the resulting statistic indicates the magnitude of the observed count in terms of the number of standard deviations above or below the mean. Adjusted standardised residuals are reported in Table 5.6 (a) to (e). As about 95% of scores in a normal distribution fall within two standard deviations of the mean, adjusted standardised residuals greater than plus or minus 2 have been treated as deviating substantially from the mean. These are reported in the following section.

Table 5.6 (a). Distribution of respondents for seven types of community participators by level of education²¹.

Level of education	Generation X Men (N=110)	Generation X Women (N=140)	Baby Boomer Men (N=155)	Baby Boomer Women (N=182)	Long Civic Men (N=151)	Long Civic Women (N=141)	Elite Connectors (N=84)
High school or less							
Expected	55.2	70.2	77.7	91.3	75.7	70.7	42.1
Observed	51	64	75	97	86	86	24
Adjusted residual	.8	1.1	.5	.9	1.8	2.8	-4.1
<i>Certificate, diploma or degree</i>							
Expected	39.8	50.6	56.0	65.8	54.6	51.0	30.4
Observed	47	54	59	66	40	43	39
Adjusted residual	1.5	.6	.5	.0	-2.7	-1.5	2.1
<i>Professional, or higher degree</i>							
Expected	15.1	19.2	21.2	24.9	20.7	19.3	11.5
Observed	12	22	21	19	25	12	21
Adjusted residual	.9	.7	.1	1.4	1.1	-1.9	3.1

²¹ Pearson $\chi^2=37.07$, $df=12$, $p=.000$. Adjusted standardised residuals >2 standard deviations above or below the mean highlighted in bold.

Table 5.6 (b). Distribution of respondents for seven types of community participants by ethnicity²².

Ethnicity	Generation X Men (N=110)		Generation X Women (N=140)		Baby Boomer Men (N=155)		Baby Boomer Women (N=182)		Long Civic Men (N=151)		Long Civic Women (N=141)		Elite Connectors (N=84)	
	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	Observed
<i>Indigenous</i>														
<i>Australian</i>														
Expected	9.6		12.2		13.5		15.9		13.2		12.3		7.3	
Observed	6		5		15		12		26		9		11	
Adjusted residual	-1.3		-2.3		.5		-1.1		4.0		-1.1		1.5	
<i>Born overseas</i>														
Expected	15.5		19.8		21.9		25.7		21.3		19.9		11.9	
Observed	5		9		23		27		35		25		12	
Adjusted residual	-3.1		-2.8		.3		.3		3.5		1.3		.0	
<i>Non-Indigenous, born in Australia</i>														
Expected	84.9		108.0		119.6		140.4		116.5		108.8		64.8	
Observed	99		126		117		143		90		107		61	
Adjusted residual	3.4		3.9		-5		.5		-5.6		-4		-1.0	

²² Pearson $\chi^2 = 56.87$, $df = 12$, $p = .000$. Adjusted standardised residuals > 2 standard deviations above or below the mean highlighted in bold.

Table 5.6 (c). Distribution of respondents for seven types of community participators by living alone²³.

Living alone	Generation X Men (N=110)	Generation X Women (N=140)	Baby Boomer Men (N=155)	Baby Boomer Women (N=182)	Long Civic Men (N=151)	Long Civic Women (N=141)	Elite Connectors (N=84)
<i>Not living alone</i>							
Expected	91.6	116.6	129.1	151.6	125.8	117.4	70.0
Observed	99	126	130	173	114	97	63
Adjusted residual	2.0	2.3	.2	4.7	-2.8	-5.0	-2.1
<i>Living alone</i>							
Expected	18.4	23.4	25.9	30.4	25.2	23.6	14.0
Observed	11	14	25	9	37	44	21
Adjusted residual	-2.0	-2.3	.2	-4.7	2.8	5.0	2.1

Table 5.6 (d). Distribution of respondents for seven types of community participators by having dependents (yes/no)²⁴.

Having dependents	Generation X Men (N=110)	Generation X Women (N=140)	Baby Boomer Men (N=155)	Baby Boomer Women (N=182)	Long Civic Men (N=151)	Long Civic Women (N=141)	Elite Connectors (N=84)
<i>Does not have dependents</i>							
Expected	73.7	93.8	103.8	121.9	101.1	94.4	56.3
Observed	69	61	92	89	138	128	68
Adjusted residual	-1.0	-6.4	-2.2	-5.8	6.9	6.5	2.9
<i>Has dependents</i>							
Expected	36.3	46.2	51.2	60.1	49.9	46.6	27.7
Observed	41	79	63	93	13	13	16
Adjusted residual	1.0	6.4	2.2	5.8	-6.9	-6.5	-2.9

²³ Pearson $\chi^2=58.23$, $df=6$, $p=.000$. Adjusted standardised residuals >2 standard deviations above or below the mean highlighted in bold.

²⁴ Pearson $\chi^2=150.76$, $df=6$, $p=.000$. Adjusted standardised residuals >2 standard deviations above or below the mean highlighted in bold.

Table 5.6 (e). Distribution of respondents for seven types of community participators by paid work/study status²⁵

Paid work/study status	Generation X Men (N=110)		Generation X Women (N=140)		Baby Boomer Men (N=155)		Baby Boomer Women (N=182)		Long Civic Men (N=151)		Long Civic Women (N=141)		Elite Connectors (N=84)	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
<i>Not in paid work or study</i>														
Expected	56.7	72.1	79.8	93.7	77.8	72.6	43.3							
Observed	17	38	42	76	140	133	50							
Adjusted residual	-8.0	-6.2	-6.6	-2.9	11.0	11.0	1.5							
<i>In part-time paid work or study</i>														
Expected	18.4	23.4	25.9	30.4	25.2	23.6	14.0							
Observed	24	46	25	48	7	4	7							
Adjusted residual	1.5	5.5	-2	3.9	-4.3	-4.8	-2.2							
<i>In full-time paid work or study</i>														
Expected	35.0	44.5	49.3	57.8	48.0	44.8	26.7							
Observed	69	56	88	58	4	4	27							
Adjusted residual	7.4	2.3	7.3	.0	-8.4	-8.0	.1							

²⁵ Pearson $\chi^2=376.99$, $df=12$, $p=.000$. Adjusted standardised residuals >2 standard deviations above or below the mean highlighted in bold.

Distributions of socio-demographic factors: Generation X

Generation X men tended to be Australian born, not to live alone, and were over-represented in full-time work. Generation X women, like the younger men, also tended to be Australian born, and were not Indigenous Australians. They tended not to live alone, and to have dependents. They were over-represented in part-time work and, to some extent in full-time work.

Distributions of socio-demographic factors: Baby Boomers

Baby Boomer men were over-represented in full-time work, and tended to have dependents. Baby Boomer women tended not to live alone, and were not unemployed, but tended to be in part-time work. Like the Baby Boomer men, Baby Boomer women tended to have dependents.

Distributions of socio-demographic factors: Long Civics

Long Civic men tended to have high school levels of education, and not certificates, diplomas or degrees. They tended to be Indigenous Australians or to have been born overseas, and tended to live alone. Being of retirement age, they tended not to have dependents or be in part-time or full-time paid work. Long Civic women tended to have high school levels of education, and not to have professional or higher degrees. They tended to live alone. Like their male age peers, being of retirement age, Long Civic women tended not to have dependents or be in part-time or full-time paid work.

Distributions of socio-demographic factors: Elite connectors

Elite connectors were highly educated, tended to live alone, and tended not to have dependents. With half the members of this type being of retirement age, they were under-represented in part-time paid work. But of the 38 members of the Long Civic Generation that belonged to the elite connector type, 15% were in paid work or study, three times as many as in the other Long Civic Generation groups.

SUMMARY OF PROFILES OF SEVEN TYPES OF PARTICIPATORS

Having described the distribution of sex and generation among the clusters, their patterns of participation, and their socio-demographic profiles, it is appropriate to synthesise these findings and present the profiles of the seven different types of participators. Like the socio-demographic factors, and levels of participation, response rates to this survey varied markedly among the different sex and generational groupings. As participation in research is a form of community participation, and one that is relevant in interpreting the findings of this study, comment on response rates among different groups has been made in the summary of profiles.

It should be noted, as has been discussed in Chapter 2, that incorrect addresses have not been taken into account in estimating response rates. The estimated response rates are therefore conservative. It should also be noted that incorrect addresses would not be evenly distributed among all groups in the community, but would be more common among those who change addresses more often, as might be expected, for example, among younger people. Response rates for members of Generation X might therefore be particularly conservative. One final point about response rates should be mentioned, which is that they included members of the elite connectors, for whom a separate response rate could not be estimated. The response rates discussed below should therefore be considered indicative, and have been included for information because they are interesting, and appear to reflect patterns of participation among the different types.

Generation X men

Generation X men in this study were a group of Australian-born non-Indigenous men, who did not live alone, and who were engaged in full-time paid work. In terms of participation, respondents in this group stood out for their lack of connectedness to their community, especially in the super-domains of civic engagement and political participation. That is, they spent only an average amount of time maintaining informal social connections, and did not take part in the civic or political life of the community. Being in full-time work, and spending more time than any other group socializing with their workmates, the lives of Generation X men were centred on their world of work. They tended not to take part in activities they did not have to take part in. With their patterns of low levels of participation, this was the group that returned a response rate of less than 11% for this study. In terms of Hypothesis 6 in

Chapter 1, these people may be among the “schmoozers” of the Eurobodalla Shire sample, at least with respect to socializing with workmates.

Generation X women

Generation X women were, like their male peers, a group of Australian-born non-Indigenous people, few of whom lived alone. Many had dependents and, probably because they had dependents, they tended to work part-time rather than full-time. Like the men, Generation X women had more social contact with workmates than other groups. In the main, they reported average levels of connectedness to the informal social and civic life of the community, but did not take part in its political life. Thus, they did not take part in the public life of the community, and were more strongly tied into its other dimensions. Like the Generation X men, these women were on the whole a low participation group. Thus, with a response rate of around 29%, Generation X women participated in this study at somewhat higher levels than might have been expected based on their levels of participation.

Baby Boomer men

Baby Boomer men were a low participation group and, like the Generation X men, did not participate in great numbers in this study. Around 16% returned questionnaires. However, their patterns of participation differed from those of the younger men. Unlike their younger counterparts, these middle-aged men participated at average levels in the civic and political life of the community. But they had lower levels of informal social connectedness than any other type. Indeed, along with the older men, Baby Boomer men were the only group to report low levels of contact with friends, the cornerstone of connectedness. These men were heavily over-represented in full-time work, and spent a little more time than average socializing with workmates. Thus, with their lives centred on work and, to some degree, on workmates, they attended to those kinds of activity that people undertake out of a sense of obligation. They under-emphasised those kinds of participation in which people engage out of choice, and those that belong to private life.

Baby Boomer women

Baby Boomer women tended not to live alone and not to engage in full-time paid work. They were the only group to record higher than average levels of contact with household members.

Other than that, their levels of participation in their community were average. Thus the lives of Baby Boomer women were centred on their homes, and therefore on activities that are undertaken out of a sense of obligation rather than choice, in the private rather than the public sphere. With a response rate to this survey of around 38%, they participated in the study at above average levels, and returned the highest response rate of any group (except possibly the elite connectors, for whom a response rate could not be calculated). This perhaps reflected the emphasis Baby Boomer women placed on activities that are undertaken with a sense of obligation, and that are part of private life, and carried out in the home.

Long Civic men

Long Civic men in this study tended to have no more than high school education, were more likely than other groups to have been born overseas or to identify as Indigenous Australians, and tended to live alone. Though of retirement age, a few had dependents, and a few were still in part-time or full-time paid work. There were no types of participation in which Long Civic men took part at high levels, but there were several in which they reported lower than average participation. These were spread evenly across informal social connections, civic engagement, and political participation, and therefore evenly across the different dimensions of participation. This was thus, across the board, a low participation group. And with their low levels of contact with friends, like the Baby Boomer men, the Long Civic men missed out somewhat on the core activity of community participation in general, and of informal social connectedness in particular. Their response rate of around 35% to this study was, therefore, considerably higher than might have been expected based on Long Civic men's general levels of community participation. Indeed, it was the second highest response rate of any of the clusters for which a response rate could be estimated.

Long Civic women

Like the older generation of men, Long Civic women tended to have no more than high school education, and tended to live alone. Also like their male peers, though of retirement age, some had dependents, and some were still in part-time or full-time paid work. But the similarity ends here, because the Long Civic women, unlike the men, were a high participation group. In particular, they had high levels of informal social connectedness, spending more time than most with their extended family, friends, and neighbours, and taking an active interest in

current affairs. They had somewhat lower than average contact with household members, perhaps reflecting their tendency to live alone, and lower than average levels of contact with workmates, reflecting their retirement status. They also engaged somewhat less in political participation than most groups. Thus the lives of the Long Civic women were centred on their informal social connections outside the home, and on those activities undertaken out of choice, and in their private lives. Their response rate of around 33% to this survey was above average, and reflected their status as high participators in the community.

Elite connectors

The elite connectors were a small group of 84 women and men, among whom only eleven were members of Generation X. Their mean age was 60 years (Md=62, SD=17.67). These people were highly educated. Compared with other groups, elite connectors were more likely to live alone (though most had partners), and they were less likely to have dependents (most had none). Of the members of this group that were of working age, most were in full-time paid work. Thus this appeared to be a group of high socio-economic status. In addition, with their exceptionally high levels of active interest in current affairs, and high levels of almost all other forms of participation, this was by far the highest participating group. Indeed, it was the only group that participated in all aspects of the civic and political life of the community, and which took part in the diversity of activities that people undertake out of choice, and in the public sphere of community life.

In terms of Hypothesis 6 in Chapter 1, these people appeared to be the “machers” of the Eurobodalla Shire. Like their American peers, these “machers” were mostly men, and people with higher levels of education (Putnam 2000, p.94). With a mean age of 60 years the group was also similar to the American machers, among whom machining “peaks in late middle age”. The elite connectors were therefore a privileged group, in the sense of having access to a disproportionately large share of the community’s resources, both in terms of socio-economic resources (such as education and paid work), and in terms of networks of association. It was the group that could be expected to have the greatest say (in terms of political participation, the only say) in how the community was run. The elite connectors were also the group that contributed the most in terms of civic engagement (in particular, voluntary sector activity) and political participation. This was perhaps partly because, as well as having the greatest

resources, this group's time and energy were not as heavily directed towards supporting and caring for dependents as were the time and energy of some of the other groups. However, their levels of participation were substantially higher than those of the Long Civic Generation groups, who also had as much time as the elite connectors for participating in the community.

The significance of not knowing the response rate for elite connectors

The issue of the response rate for this group is an interesting one. Firstly, it should be noted that it was not possible to estimate a response rate to this survey for this group, and that this might be an interesting point to follow up in future research. It could perhaps be hypothesised that this would be the highest response rate group, given that it contains by far the highest participators, and also more than half its members came from the high response rate Long Civic Generation.

A second and related point is to do with the proportion of a community that could be estimated to belong to the socio-economically and participatory elite. In this study, elite connectors represented less than 9% of the sample. It has been shown that, for the most part, response rates for each group reflected levels of community participation. It may therefore be hypothesised that elite connectors were over-represented in the sample, relative to the other groups, because they would likely have responded at a higher rate than the other groups. Elite connectors would thus be an extremely small proportion of community members, and it could be proposed that power and influence in communities are concentrated in the hands of a very small minority indeed. This would be an interesting matter for future research.

COMPARING THE TWO- AND SEVEN-CLUSTER SOLUTIONS

In terms of the agglomeration schedules and of the criterion of parsimony, both the two- and seven-cluster solutions are acceptable. In both cases, the Bayesian and Akaike criteria revealed two clusters and seven clusters respectively. This suggests stable solutions for both cluster analyses. The criterion of meaningfulness and scientific usefulness will be evaluated in two parts.

Meaningfulness

In terms of meaningfulness, the two-cluster solution produced a self-evidently plausible solution comprising a smaller group of high participators and a larger group of low participators. The seven-cluster solution produced six groups ranging from 110 to 182 members, and one very small group of 84 respondents, and these required greater effort to define. For the seven-cluster solution, each of the clusters differed in terms of the socio-demographic variables and in terms of levels of community participation, and appeared to represent seven distinct types of people in the community with respect to their patterns of participation. Six of the clusters were clearly defined along sex and generational lines, and one was not. The first six of these were therefore named according to the sex and generation they represented, and the last was tentatively named the “elite connectors”. From the point of view of meaningfulness, these categories seem to reflect a reality in the community. That is, women and men differ in their levels and patterns of participation, as do different generations, and societies contain elites who exist as a special category, outside the norm for most people. Thus, it makes sense to think of people in the community in terms of those seven categories. This suggests that the seven-cluster solution, like the two-cluster solution, met the meaningfulness criterion.

Scientific usefulness

Which is the better of the two solutions with respect to scientific usefulness is a matter for judgement. In terms of participation, it is useful to think of people in the community as high and low participators, and the two-cluster solution has the benefit of being very simple, and self-evidently easy to interpret. On the other hand, this is not a very informative solution. Other than identifying high and low participators, the clusters reveal little else about the ways in which different types of people connect with their communities, or who these people are. The cluster solution is not much, if any, more useful than simply dichotomizing scores on the participation variables and assigning respondents as high or low scorers.

To the extent that a distinction between high and low participators is useful, this distinction is retained in the seven-cluster solution. Indeed, it is elucidated: the elite connectors are very high participators, the Long Civic women are high participators, the Generation Xers and Baby Boomer men are low participators, and the Baby Boomer women are average participators. This appears to be a more informative solution than the two-cluster solution, because it offers a richer and subtler characterisation of different types of people's patterns of participation. It also suggests, as a result of including sex and generation in the cluster analysis, some possible reasons for these patterns.

For example, there is perhaps a reason that Baby Boomer men reported spending little time connecting broadly with their communities, which may be because they are absorbed in the world of paid work and supporting their dependents financially. And perhaps Generation X women and Baby Boomer women are perhaps under-involved in civic and political life because they are more involved with taking care of dependents, and therefore too busy to spend time in many other forms of connection with their communities. Perhaps elite connectors, with their socio-economic advantages, and less responsibility than most for taking care of dependents, may have more time, energy and resources to invest in connecting with the community in a broad selection of ways. These would all be testable hypotheses in future research.

Thus, in sum, it would appear that the seven-cluster solution offers the advantages of the two-cluster solution, plus some additional sophistication. The two-cluster solution thus seems redundant, and the seven-cluster solution accepted.

CONCLUSION: SEVEN TYPES OF COMMUNITY PARTICIPATORS

Two approaches to determining the appropriate number of clusters have been reported, one based solely on domains of participation, the other based on domains of participation together with sex and generation. In terms of the evaluation criteria (the agglomeration schedules, parsimony, and meaningfulness and scientific usefulness), the two- and seven-cluster solutions

were both acceptable. However, the seven-cluster solution offered a richer and more sophisticated characterization of types of participators, and was therefore a stronger solution in terms of meaningfulness and scientific usefulness. It was thus the preferred solution.

It is proposed that there are seven clusters, or categories of respondents, in this sample. These represent seven different types of people living in the communities of the Eurobodalla Shire. These seven types differ systematically from one another, not just in terms of their patterns of community participation, but also in terms of their socio-demographic characteristics. Table 5.7 presents a summary of the key features of each type in terms of participation and socio-demographic characteristics.

Table 5.7. Summary of the key distinguishing features of each type in terms of socio-demographic characteristics and of high and low levels of community participation (references to paid work include studying).

Generation X Men (N=110)	Generation X Women (N=140)	Baby Boomer Men (N=155)	Baby Boomer Women (N=182)	Long Civic Men (N=151)	Long Civic Women (N=141)	Elite Connectors (N=84)
Australian born and not	Australian born, and not	Tend to be in full-time paid work	Don't live alone	High school education, tend not to have degree	High school education, tend not to have higher degree	Tend to have degree or higher degree
Tend to be in full-time paid work, and not unemployed	Indigenous or born overseas	Tend to have dependents	Tend to be in part-time paid work, and not unemployed	Tend to be overseas born or Indigenous	Tend to live alone	Tend to live alone
	Don't live alone		Tend to have dependents	Tend to live alone	Tend not to have dependents	Tend not to have dependents
	Tend to be in full-time, or part-time paid work			Tend not to have dependents	Tend not to be in part-time paid work	Tend not to be in part-time paid work
	Tend to have dependents			Tend not to be in paid work		
<i>Very high levels</i>	High levels	High levels	High levels	<i>High levels</i>	<i>High levels</i>	<i>Very high levels</i>
Workmates	Workmates	Workmates	Household members	High levels	Extended family	Current affairs
<i>Low levels</i>	Low levels	<i>Low levels</i>	Household members	Nil	Friends	Workmates ²⁶
Religious observ.	Volunteering	Extended family	Learning	Low levels	Neighbours	High levels
Volunteering	Current affairs	Friends	Low levels	Friends	Current affairs	Friends
Giving money	Express opinions	Neighbours	Activism	Workmates	Low levels	Neighbours
Current affairs	Activism	Learning	Activism	Household members	Household members	Learning
Express opinions	Political protest	Religious observ.	Political protest	Political protest	Workmates	Religious observ.
Activism					Express opinions	C'ty activities
					Activism	Volunteering
					Political protest	Giving money
						Express opinions
						Activism
						Political protest
						Low levels
						Nil

²⁶ Those in paid work report very high levels of social contact with workmates.

CHAPTER 6: ASSOCIATIONS BETWEEN COMMUNITY PARTICIPATION AND PSYCHOLOGICAL DISTRESS

CHAPTER SUMMARY

This chapter describes bivariate and multivariate relationships between domains of volitional community participation and general psychological distress, and introduces the concept of trust as a mediating variable in this relationship. The chapter begins by examining the associations in this sample between socio-demographic factors and psychological distress, so that these factors may be taken into account as covariates in further analyses. The bivariate and multivariate associations among domains of participation and distress are then examined, controlling for relevant socio-demographic factors. Preliminary analyses of these data with respect to levels of trust indicated that it was appropriate to partition the sample and conduct the analyses for each generation of respondents separately. The examination of the associations between participation and distress, and of the hypothesised mediating concept, social trust, in the relationship between participation and distress, were therefore conducted generation by generation.

LINKING PARTICIPATION AND DISTRESS

The exploratory and confirmatory factor analyses, multi-dimensional scaling, and cluster analysis described in Chapters 3 to 5 represent different approaches to describing the basic elements, super-structures and dynamics of volitional community participation, and how participation may be expressed in different types of people in a community. Those analyses were conducted for their own sake, and also so that the question of any relationship between community participation and general psychological distress could be later addressed. Thus the present chapter reports on the associations among domains of participation and distress, how these associations relate to the super-domains and

dimensions of participation, and the different experiences of different generations of respondents within this sample.

AIMS AND STATISTICAL METHODS

Aims of this Chapter

The overall aim of this chapter was to explore the relationship between the domains, super-domains and dimensions of volitional community participation, and general psychological distress. Specifically, the first aim was to examine any associations between each domain of community participation, and distress. A second aim was to review these findings with respect to the super-domains and dimensions of community participation, so as to evaluate what *kinds* of participation, if any, were associated with distress. A third aim was to explore why participation and distress might be linked, with particular reference to their shared associations with social trust. This included multivariate examinations of the relative contributions made by relevant variables to explaining differences in scores in distress for this sample. A fourth aim was to evaluate whether the relationships among participation, social trust, and distress were the same for different types of people, that is, for women and men, and for different generations of respondents within the sample.

Statistical methods

The statistical methods used in this chapter included correlations, partial correlations, analyses of variance, and various multiple regression analyses. As these methods are all commonly used in psychiatric epidemiology, they have not been reviewed here.

DOMAINS OF PARTICIPATION AND GENERAL PSYCHOLOGICAL DISTRESS: BIVARIATE ASSOCIATIONS

A first step in evaluating the strength and nature of any relationship between volitional community participation and general psychological distress was to examine bivariate relationships between each domain of participation and distress. To accomplish this, correlation coefficients were computed. For these data, which violate the assumption of normality of distribution, it was appropriate to calculate Spearman's r correlation coefficient, which is a non-parametric statistic. Spearman's r correlation coefficients for domains of participation and distress are presented in Table 6.1.

However, the multivariate analyses that follow later in this chapter cannot be conducted using Spearman's r , and rely on Pearson's product moment correlation coefficients (Pearson's r), and on other statistics, that assume normality in the distributions of dependent variables. For the sake of consistency with later analyses, Pearson's r correlation coefficients were therefore also computed to evaluate bivariate associations between domains of community participation and general psychological distress (Table 6.2). It should be noted that, with skewed data, Pearson's r correlation coefficients may underestimate the magnitude of the correlations. However, as can be seen in Tables 6.1 and 6.2, the coefficients were similar for both methods of calculation, indicating that the violation of normality is not a serious difficulty with this analysis.

Eight of the domains of participation were significantly negatively correlated with distress at $p < .05$ (Table 6.2). That is, those who engaged more in these domains of participation reported significantly lower levels of distress than those who engaged less. In order of magnitude of correlation coefficients (largest first), the eight domains were contact with friends, contact with neighbours, contact with extended family, organised community activities, religious observance, giving money to charity, active interest in current affairs, and voluntary sector activity. With values ranging from $-.20$ to $.07$, all statistically significant correlations were small. The remaining six domains of participation were not significantly associated with distress. These were contact with household members, social contact with workmates, ongoing informal learning, expressing opinions publicly, community activism, and political protest.

Interim conclusion: distress is related to *some* domains of participation

This preliminary evaluation of the data indicated that not all domains of community participation were associated with psychological distress. For those that were, the strength of the associations varied, and all values were small.

Table 6.1. Spearman's *r* correlation coefficients for domains of participation with general psychological distress and trust (measured using the *World Values Survey* item and the adapted *Organisational Trust Inventory*).

Domain of participation	<i>r</i> Trust (<i>Organisational Trust Inventory</i>)					
	<i>r</i> General psychological distress (K10)	<i>r</i> Trust (<i>World Values Survey</i>)	<i>r</i> Negotiate honestly	<i>r</i> Don't take advantage	<i>r</i> People are reliable	<i>r</i> Full scale
Contact with household members		.07*	.05	.08**	.05	.07*
Contact with extended family	-.07*	.08**	.10***	.08***	.06*	.09**
Contact with friends	-.14***	.12***	.21***	.20***	.24***	.24***
Contact with neighbours	-.19***	.15***	.15***	.18***	.20***	.20***
Social contact with workmates	-.16***	.02	-.02	.00	-.03	-.01
Ongoing informal learning	-.05	.08**	.04	.09***	.10***	.09**
Religious observance	-.03	.10**	.14***	.13***	.18***	.17***
Organised community activities	-.12***	.12***	.15***	.15***	.17***	.18***
Voluntary sector activity	-.11***	.03	.07*	.09***	.06*	.08**
Giving money to charity	-.04	.10**	.13***	.11***	.13***	.14***
Active interest in current affairs	-.11**	.02	.13***	.07*	.13***	.12***
Expressing opinions publicly	-.11**	.00	-.00	-.02	-.04	-.02
Community activism	.04	.05	.00	-.01	-.02	-.01
Political protest	.02	.10**	.05	.02	.05	.05

* $p < .05$

** $p < .01$

*** $p < .001$

Table 6.2. Pearson's *r* correlations between domains of participation, and general psychological distress, and trust measured using the *World Values Survey* item and the adapted *Organisational Trust Inventory*.

Domain of participation	<i>r</i> General psychological distress (K10)	<i>r</i> Trust (<i>World Values Survey</i>)	<i>r</i> Trust (<i>Organisational Trust Inventory</i>)			
			<i>r</i> Negotiate honestly	<i>r</i> Don't take advantage	<i>r</i> People are reliable	<i>r</i> Full scale
Contact with household members	-.05	.07*	.05	.05	.05	.05
Contact with extended family	-.16***	.09**	.10**	.08**	.08**	.10**
Contact with friends	-.20***	.13***	.22***	.19***	.27***	.26***
Contact with neighbours	-.18***	.15***	.14***	.18***	.20***	.20***
Social contact with workmates	-.06	.02	.01	.00	.01	.01
Ongoing informal learning	-.04	.06	.03	.06	.08*	.06
Religious observance	-.11***	.07	.11***	.12***	.15***	.14***
Organised community activities	-.13***	.11***	.15***	.15***	.18***	.19***
Voluntary sector activity	-.07*	.03	.09**	.09**	.07*	.10**
Giving money to charity	-.11***	.09	.13***	.11***	.13***	.15***
Active interest in current affairs	-.09**	.02	.12***	.08*	.13***	.12***
Expressing opinions publicly	.03	-.01	-.02	-.06	-.07*	-.06
Community activism	-.01	.04	.03	-.02	-.02	.00
Political protest	.06	.06	.03	-.01	.01	.01

* p<.05

** p<.01

*** p<.001

Previously, we have seen that the fourteen domains of community participation are not independent of each other. With respect to their ability to explain differences in distress scores, it is therefore possible that some of the variance in some bivariate relationships was explained by variance in others. This was not taken into account in computing the first-order correlations reported above. It was thus necessary to re-examine the relationship between the domains of participation and distress in a way that took account of any overlap among domains, so that the unique contribution of any one domain of participation to explaining differences in distress might be separately identified.

DOMAINS OF PARTICIPATION AND GENERAL PSYCHOLOGICAL DISTRESS: PARTIAL CORRELATIONS

To evaluate the unique contribution of each domain of participation to explaining differences in scores in general psychological distress, partial correlation coefficients were computed. That is, the bivariate correlation between each domain of participation was computed controlling for the effects of all the other domains of participation. The partial correlations are presented in Table 6.3.

Five domains of participation are independently associated with psychological distress

Partial correlations revealed that, when controlling for the effects of all other domains of participation, only five domains made a unique contribution to explaining differences in general psychological distress. With values ranging from $-.11$ to $.09$, all statistically significant values remained very small. In order of the magnitude of the partial correlations (largest absolute value first), these were contact with neighbours, political protest, contact with extended family, contact with friends, and organised community activities. Some of the domains of participation made a contribution to explaining differences in general psychological distress when first-order correlations were examined, but did not make a contribution when overlap among domains was taken into account. These were religious observance, giving money to charity, active interest in current affairs, and voluntary sector activity. That is, these domains of participation had no independent relationship with psychological distress when their shared relationship with other domains of participation was taken into account.

Table 6.3. Partial correlation coefficients for each domain of participation, with general psychological distress and trust measured using the *World Values Survey* item and the adapted *Organisational Trust Inventory*, controlling for all other domains of participation.

Domain of participation	Partial <i>r</i> Trust (<i>Organisational Trust Inventory</i>)					
	Partial <i>r</i> General psychological distress (K10)	Partial <i>r</i> Trust (<i>World Values</i> item)	Negotiate honestly	Don't take advantage	People are reliable	Full scale trust
Contact with household members	-.04	.07*	.05	.06	.05	.07*
Contact with extended family	-.08**	.04	.02	.00	-.03	.00
Contact with friends	-.07*	.05	.14***	.10**	.18***	.16***
Contact with neighbours	-.11***	.10**	.05	.11**	.09**	.10**
Social contact with workmates	-.06	-.03	-.03	-.02	-.02	-.03
Ongoing informal learning	-.03	.01	-.05	-.01	-.01	-.03
Religious observance	-.06	.04	.07*	.08*	.11**	.10**
Organised community activities	-.07*	.08**	.09**	.08*	.11**	.11**
Voluntary sector activity	.00	-.06	.00	.02	-.02	.00
Giving money to charity	-.03	.05	.04	.03	.03	.04
Active interest in current affairs	-.06	-.04	.06	.03	.08**	.06
Expressing opinions publicly	.04	-.05	.07*	-.08**	.11**	-.10***
Community activism	-.02	.01	.00	-.03	-.04	-.02
Political protest	.09**	.06*	.02	.02	.03	.03

* $p < .05$

** $p < .01$

*** $p < .001$

Political protest is a domain of particular interest. It was not significantly associated with distress when first-order correlations were examined. However, controlling for the other domains of participation, the partial correlation coefficient for political protest did reach statistical significance, indicating that this domain made a unique contribution to explaining differences in distress. The correlation was positive, indicating that higher levels of protest are associated with higher levels of distress.

Distress and the super-domains and dimensions of community participation

In terms of the super-domains of volitional community participation, three of the four domains of participation that were associated with lower distress scores were the key domains of informal social connectedness (contact with extended family, contact with friends and contact with neighbours). These were also among the five core domains of community participation identified in Chapter 4. The other domain of participation that was associated with lower distress scores was one of the key domains of civic engagement (organised community activities), and was also one of the five core domains of community participation identified in Chapter 4. The domain of participation that was associated with *higher* distress scores was from the super-domain of political participation (political protest).

In terms of the dimensions of participation, lower levels of distress were associated with domains located towards the private end of the public-private dimension and, with the exception of contact with extended family, at the choice end of the choice-obligation dimension. Thus it may be concluded that, for this sample of rural Australian adults, low levels of distress were most closely connected with informal social connections, and primarily with spending time doing activities they undertook by choice in their private lives.

The only domain of participation that was associated with higher levels of distress was a form of political participation, and located at the public extreme of the public-private dimension. Thus, for these respondents, higher levels of distress were most strongly associated with participating in the public life of the community by getting involved in political protest.

Interim conclusion: participation and distress

These results are interesting in terms of understanding the relationship between domains of community participation and psychological distress. At the same time, based on this analysis of first-order and partial correlations, it might seem that participation and distress are not strongly linked: only a minority of domains of participation was associated with distress, and each of those only to a small degree.

Before settling on this conclusion, however, it is reasonable to consider three further issues in analysing these data. One is that partial correlations indicate only the unique variance between the independent and dependent variables, and exclude all shared variance. Partial correlations therefore underestimate the overall relationships between variables. Secondly, partial correlations examine the bivariate relationships among variables, not the multivariate relationships. A goal of this thesis is to evaluate the relationship between community participation holistically and distress. In order to do this, it was necessary to include all domains of participation in sequential multivariate models. Finally, it is possible that levels of community participation make an important contribution to explaining differences in distress among people, not only directly, but also indirectly, through their effect on another factor that also influences levels of distress. That is, participation may be linked with distress in its own right, and also through a mediating concept.

CONTROLLING FOR SOCIO-DEMOGRAPHIC FACTORS IN THE RELATIONSHIP BETWEEN PARTICIPATION AND DISTRESS

Before conducting analyses of the relationship between participation and distress, and any mediating or moderating variables (Baron & Kenny 1986), however, it was necessary to evaluate any relationship between socio-demographic factors that might contribute to differences between respondents in levels of distress (mediators), and that might also interact with levels of participation (moderators). We saw in Chapter 5 that certain socio-demographic factors were not only significantly associated with levels of volitional community participation, but were also integral to understanding patterns of participation among different types of people within the community. These were sex, generation, ethnicity, level of education, paid work/study status, living alone, and having dependents. It was therefore appropriate to take

account in the analysis of variance of the influence on distress, and also on levels of participation, of these socio-demographic factors.

Generation and paid work status independently influence distress

The analysis of the relationship between participation and distress therefore began with a preliminary analysis of variance of the relationship between socio-demographic factors and distress. In this analysis, the dependent variable was general psychological distress, and the independent variables were the seven socio-demographic factors listed above. All main effects and all two-way interactions were evaluated. In the interests of accuracy, simplicity, and parsimony, non-significant interaction terms were removed one at a time, starting with the term with the smallest *F* value, and the results re-evaluated. Non-significant main effects were also removed in the same manner, but only if they were not involved in a significant interaction term. That is, non-significant main effects were retained in the model if they were involved in significant interaction terms. In the final model, significant main effects were found for generation and paid work/study status. There were no significant interactions between any of the socio-demographic factors. The final model is presented in Table 6.4. As there were significant main effects for generation and paid work/study, the interaction term between them is shown in the Table, even though it was non-significant.

Table 6.4. Univariate analysis of variance for level of distress for three generations and three levels of paid work status, and a non-significant interaction term.

Source of variation (distress)	Sums of squares	Degrees of freedom	Variance estimate	<i>F</i> -ratio	<i>p</i>	Partial η^2
Between groups						
Generation	573.42	2	286.71	7.95	.00	.02
Paid work/study	674.91	2	337.46	9.36	.00	.02
Interaction						
Generation*paid work ²⁷	60.23	4	15.06	.42	.80	.00
Within groups (error)	34384.01	954	36.04			

²⁷ This non-significant interaction term is included for information. It does not affect the *p* or partial η^2 values for the significant main effects.

As Table 6.4 shows, two socio-demographic factors, generation, and paid work/study status, made unique contributions to explaining differences in distress scores in this sample. Mean distress scores and standard deviations for each generation, and then for each level of paid work/study status, are presented in Table 6.5.

Table 6.5. Mean scores and standard deviations showing levels of distress for three generations and three levels of paid work status.

Factor	Number in group	Distress (K10)	
		Mean	Standard deviation
Generation			
Generation X	261	19.02	6.55
Baby Boomers	364	18.72	6.45
Long Civics	338	16.94***	5.26
Paid work status			
Not in paid work	496	18.46	6.62
Part-time paid work	161	18.38	5.78
Full-time paid work	306	17.62***	5.50
Total	963	18.18	6.15

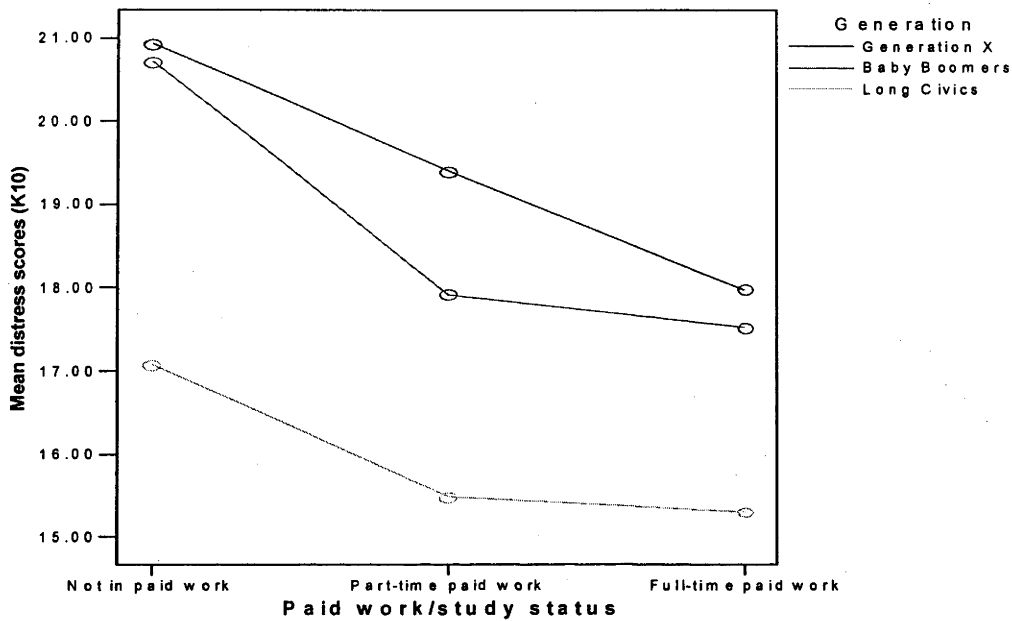
*** Mean score is significantly higher than mean scores for other groups, $p < .001$

For descriptive purposes, Table 6.6 shows mean distress scores and standard deviations for each generation for each level of paid work/study status.

Table 6.6. Mean distress scores and standard deviations for three generations by paid work or study status.

Paid work or study status	N	Mean distress	Standard deviation
Generation X			
Not in paid work or study	58	20.9239	8.55728
In part-time paid work or study	72	19.3924	5.92187
In full-time paid work or study	131	17.9820	5.64599
Total for Generation X	261	19.0248	6.55428
Baby Boomers			
Not in paid work or study	127	20.7101	7.47437
In part-time paid work or study	76	17.9192	5.76609
In full-time paid work or study	161	17.5192	5.46850
Total for Baby Boomers	364	18.7160	6.44991
Long Civic Generation			
Not in paid work or study	311	17.0745	5.35534
In part-time paid work or study	13	15.4782	3.58670
In full-time paid work or study	14	15.2987	4.05389
Total for Long Civic Generation	338	16.9395	5.26165
All generations			
Not in paid work or study	496	18.4555	6.62043
In part-time paid work or study	161	18.3809	5.77560
In full-time paid work or study	306	17.6157	5.50309
Total for all generations	963	18.1762	6.15220

For ease of presentation, the results from Table 6.6 are also illustrated in Figure 6.1.



Figure

6.1. Mean distress scores for three generations by paid work or study status.

Figure 6.1 shows that members of Generation X had the highest levels of distress, followed by the Baby Boomers, while the Long Civic Generation had the lowest levels of distress. In addition, levels of distress were lower for those in paid work or study for all generations. That is, two factors, being older, and being in paid work or study, were independently associated with fewer symptoms of general psychological distress for respondents in this sample.

PARTICIPATION AND DISTRESS, CONTROLLING FOR GENERATION AND PAID WORK/STUDY STATUS

Having identified the two socio-demographic factors that contributed to differences between respondents in levels of distress, it was possible to evaluate the relationship between participation and distress taking account of these factors. A second analysis of variance was therefore conducted to investigate the relationship between domains of participation and the dependent variable, general psychological distress, controlling for generation and paid work/study status.

Five domains of participation were uniquely associated with distress

Main effects for all fourteen domains of community participation, and the two relevant socio-demographic variables, were evaluated, as were all two-way interactions involving generation or paid work/study status. Non-significant interaction terms and main effects were removed sequentially, with analysis repeated in the same manner as before. The final model is presented in Table 6.7, which shows that significant main effects for generation and paid work/study status remained. Consistent with the results of the partial correlations analysis, main effects were also found for five domains of participation (contact with extended family, contact with friends, contact with neighbours, organised community activities, and political protest). For comparative purposes, the main effects for the socio-demographic variables on differences in levels of distress, in a model that included relevant forms of community participation, are shown in Figure 6.2. As Figure 6.2 shows, these relationships remained much the same as they were before, with older generations, and people in paid work/study, reporting fewer symptoms of distress.

Table 6.7. Univariate analysis of variance for level of distress for significant socio-demographic factors, domains of community participation, and interaction terms.

Source of variation (distress)	Sums of squares	Degrees of freedom	Variance estimate	F-ratio	p	Partial η^2
Main effects						
Generation	724.24	2	362.12	10.94	.00	.02
Paid work	684.01	2	342.01	10.33	.00	.02
Extended family	258.93	1	258.93	7.82	.01	.01
Friends	105.49	1	105.49	3.19	.07	.00
Neighbours	536.99	1	536.99	16.22	.00	.02
Organised activities	179.26	1	179.26	5.41	.02	.01
Political protest	439.47	1	439.47	13.27	.00	.01
Interactions						
Generation*friends	347.89	2	173.95	5.25	.01	.01
Paid work*friends	235.59	2	117.79	3.56	.03	.01
Generation*friends*paid work/study ²⁸	37.48	4	9.37	.28	.89	.00
Within groups (error)	31285.56	945	33.11			

²⁸ This non-significant interaction term is included for information. It does not affect the *p* or partial η^2 values for the significant main effects and interaction terms.

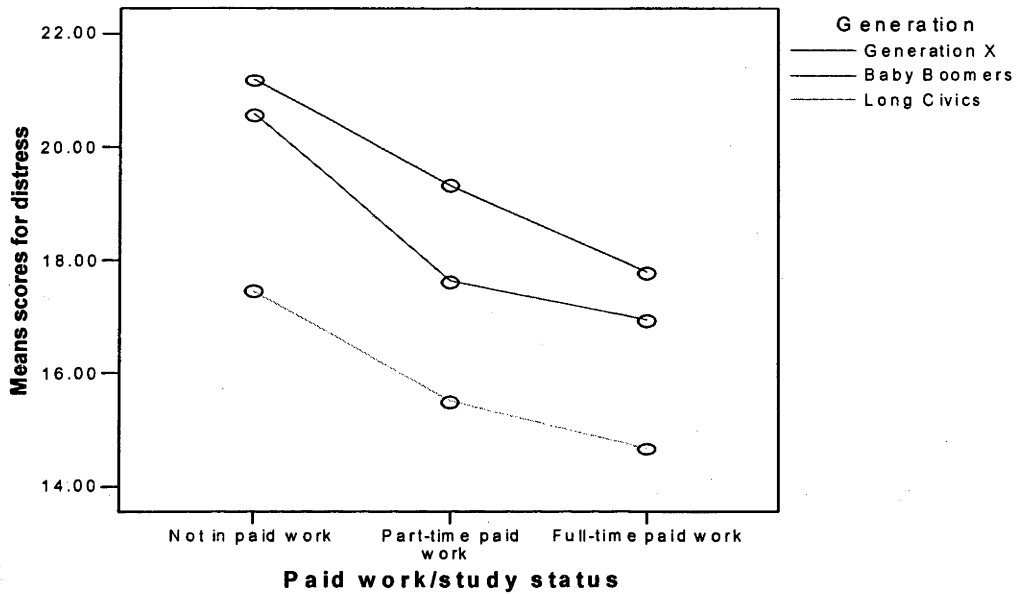


Figure 6.2. Mean distress scores for three generations by paid work or study status, in a model that included relevant domains of community participation.

Moderators of relationships between participation and distress

In addition to the main effects reported above, two significant interactions were found. These were generation by contact with friends, and paid work/study status by contact with friends. As both of these interactions involved contact with friends, a three-way interaction between generation, paid work/study status, and contact with friends was tested, but was not significant ($F=.28, p=.889$). It is included for information in Table 6.7. The significant two-way interactions are represented in Figures 6.3 and 6.4. For the sake of simplicity of presentation, scores for contact with friends have been dichotomised by median split.

As Figure 6.3 shows, all generations had lower levels of distress when they reported having contact with friends, but this was more evident among the Baby Boomers than among the other generations. Figure 6.4 shows that people who did not have contact with their friends reported higher levels of distress than those who did, especially if they were not in paid work, or if they were in part-time paid work.

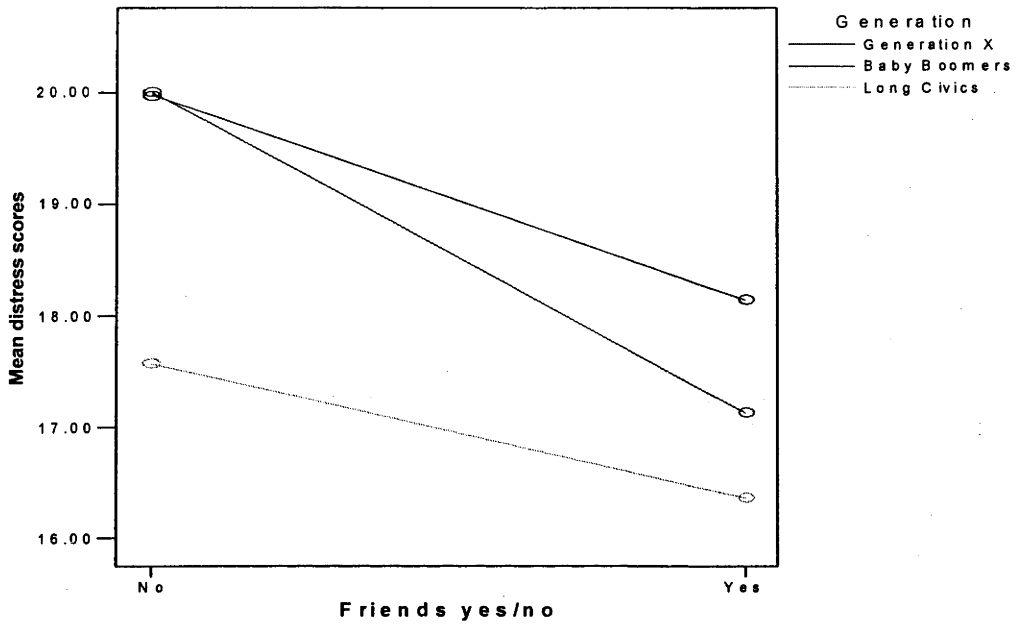


Figure 6.3. Interaction between generation and having contact with friends in predicting distress scores.

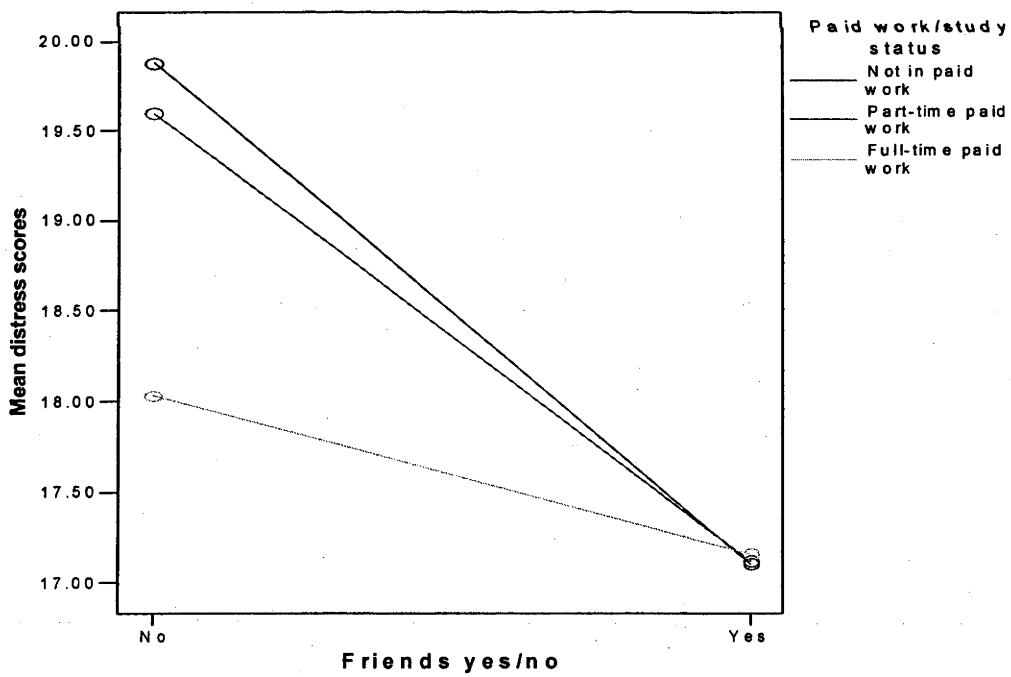


Figure 6.4. Interaction between paid work/study status and having contact with friends in predicting distress scores.

While the numbers of respondents in each sub-group were too small to interpret these results further, this finding suggests testable hypotheses for future research with respect to the psychiatric benefits of friendship for those in part-time paid work or study, or not in paid work or study. That is, contact with friends may be an important mechanism for managing or reducing distress during periods of unemployment, or under-employment. Mental health problems are a common outcome of unemployment, and are also a source of difficulty in finding and retaining employment (Butterworth & Berry 2004). Building, maintaining or enhancing friendships may therefore be a valuable strategy for addressing mental health problems with respect to employment status and transitions (Harris et al 1999, Peart 2003).

COMBINED EFFECTS OF DOMAINS OF PARTICIPATION ON PSYCHOLOGICAL DISTRESS

The analyses of variance described above indicate that contact with extended family, friends, and neighbours, taking part in organised community activities, and avoiding political protest are all separately associated with lower levels of general psychological distress, and that being older, and being in paid work or study, also have independent associations with lower levels of distress. In addition, generation, and paid work/study status, had moderating effect in the relationship with distress via levels of contact with friends. Thus, certain socio-demographic factors and certain domains of participation had separate associations with general psychological distress, and some also had interactive associations with distress. Just as the cluster analyses in Chapter 5 showed that certain socio-demographic factors were not only significantly associated with levels of volitional community participation, but also integral to understanding patterns of participation among different types of people within the community, the present analysis showed that certain socio-demographic factors were integral to understanding the relationship between participation and distress.

Quantifying the relationship between participation and distress

These findings were interesting from a theoretical perspective, in that they helped describe the nature of the relationship between participation and distress. To help describe this relationship further, it was useful to quantify it, and to show the extent to which relevant socio-demographic

factors, participation variables, and interaction terms explained variance in distress scores reported by different respondents was calculated. This was accomplished by examining multiple correlations.

We saw earlier in this chapter that the partial correlations between each of the domains of participation and distress were small (Table 6.3), suggesting that the relationship between community participation and distress might not be strong. However, in order to substantiate this conclusion, the multiple correlations needed to be examined. The multiple correlation for all significant domains of participation taken together, derived from a multiple regression analysis, was $R=.30$ ($p<.001$). This was substantially larger than all the individual partial correlations, and was in the moderate range. For the significant domains of participation, together with the significant socio-demographic factors and interaction terms, multiple R was $.35$ ($p<.001$), also in the moderate range.

The multiple regression for this latter model is presented in Table 6.8. In this model, it can be seen that the significant socio-demographic and participation variables, together with the significant interaction terms, explained approximately 13% of variance in scores for psychological distress ($R^2=.13$). It was thus reasonable to conclude that community participation might be a useful concept with respect to understanding different levels of psychological distress among members of a community.

Table 6.8. Summary of multiple regression analysis on distress (K10) of significant socio-demographic factors, domains of participation, and interaction terms (N=963).

Domains of participation	B	SE B	β	$R^2_{distress}$	p
Age	-.13	.04	-.40	.13	.000
Hours paid work/study per week	-1.23	.38	-.39		
Contact with extended family	-.44	.15	-.10		
Contact with friends	-1.42	.58	-.31		
Contact with neighbours	-.48	.13	-.12		
Organised community activities	-.24	.09	-.08		
Political protest	.74	.19	.12		
Age*contact with friends	.01	.01	.22		
Paid work*contact with friends	.11	.08	.17		

WHY ARE PARTICIPATION AND DISTRESS LINKED?

In addition to showing the potential usefulness of the concept of community participation in direct relationship to distress, it is also possible to consider other factors that might be associated with participation, and that might also be associated with distress, such as trust in others. The relationship between participation and social trust was introduced in Chapter 1. Briefly, it has been hypothesised that part, or all, of the relationship between community participation and distress might be indirect and thus not fully accounted for in a model involving only participation variables and distress. Specifically, it has been proposed that levels of participation are associated with levels trust that are, in turn, associated with distress. That is, social trust is a mediator of the relationship between community participation and psychological distress.

The role of social trust

Consistent with social capital theory, and also with the proposition that participation in the community leads to increased social trust (Brehm & Rahn, 1997), it was hypothesised in Chapter 1 that higher levels of community participation would be associated with higher levels of social trust (Hypothesis 8). That is, it is proposed that the more people participate in the community, the higher will be their levels of social trust, and the higher their levels of social trust, the lower will be their levels of distress. It was therefore appropriate to examine the relationship between participation and distress in the light of the association of both concepts with trust.

Measuring social trust

Trust is a complex construct that has not been well conceptualised or measured in social epidemiology. Issues to do with measuring social trust, and interpreting research findings based on different approaches to measurement, have been evaluated using data from this study (Berry & Rodgers, 2003). A summary of measurement issues and of findings has been presented in Chapter 1, and details are not repeated here.

Details of the scales used to measure trust in this study were given in Chapter 2. In sum, social trust was measured using the single item measure from the *World Values Survey* (Inglehart &

al. 1997), and the three sub-scales of the *Organisational Trust Inventory (OTI)* (Cummins & Bromiley 1996), as adapted for use in survey research with general populations of adults (Berry & Rickwood 2000, Berry & Rodgers 2003). The *World Values Survey* item has a forced-choice format requiring respondents to choose between two statements: “most people can be trusted” (the trusting response) and “you can’t be too careful” (the non-trusting response). The item is scored 0 (low trust) or 1 (high trust). The *OTI* sub-scales gauge the degree to which respondents accept the propositions that most people try to negotiate honestly, avoid taking advantage of others, and are reliable. The three sub-scales may be combined to produce a full-scale score. Possible mean scores on the three sub-scales and the full scale range from 1 (low trust) to 7 (high trust). Mean scores and standard deviations for all measures of trust are presented in Table 6.9.

Table 6.9. Mean scores (and standard deviations) for all measures of trust for women and for men, and for three generations of Australians.

	Women	Men	Generation X	Baby Boomers	Long Civics	Total
<i>World Values Survey</i> trust item	.70	.62	.57	.70	.70	.67
	.46	.48	.50	.46	.46	.48
<i>Organisational Trust Inventory</i>						
Negotiate honestly	5.01	4.80	4.77	4.83	5.11	4.91
	.93	.99	.93	.99	.92	.96
Don't take advantage	4.77	4.53	4.50	4.60	4.85	4.66
	1.22	1.26	1.22	1.28	1.21	1.25
Are reliable	5.11	4.84	4.83	4.90	5.18	4.98
	.95	1.02	.97	1.02	.96	.99
Full scale	4.96	4.72	4.70	4.77	5.05	4.85
	.90	.94	.89	.95	.90	.93

DOMAINS OF PARTICIPATION AND SOCIAL TRUST: FIRST-ORDER CORRELATIONS

A first step in reviewing the relationship between participation and distress in the light of the association of both concepts with social trust was to examine the first-order correlations between participation and all measures of trust. Spearman's r correlations are presented in Table 6.1, and Pearson's r correlations in Table 6.2. As expected²⁹, the sub-scales and full-

²⁹ For a discussion of measurement issues associated with social trust, see Chapter 1.

scale of the *OTI* measure of trust produced larger correlations with distress than did the *World Values Survey* item. This is because it is a more accurate and sensitive measure (Berry & Rodgers, 2003).

With Pearson's r values ranging from .07 to .27, all statistically significant correlations were small to modest. All correlations were positive, indicating, as hypothesised, that higher levels of community participation were associated with higher levels of social trust. The correlations were largest for the contact with friends and contact with neighbours, indicating that trust may be most strongly associated with informal social connectedness, and with activities undertaken in private life and primarily out of choice. The strongest relationship of all was between the belief that people are reliable and contact with friends ($r=.27, p<.001$). Thus, the more time respondents reported spending with friends, the greater their belief that most people are reliable.

Correlations with religious observance and organised community activities were also relatively large, suggesting that trust was also significantly associated with civic engagement, and with kinds of participation undertaken out of choice. With very small, non-significant associations among measures of social trust and expressing opinions publicly, community activism, and political protest, trust was not related to political participation, or to the public dimension of community participation. There were also no statistically significant relationships between social trust and social contact with workmates, or contact with household members, or thus with the obligation-based ways of participating in the community. Thus, from the point of view of the dimensions of participation, social trust was, like distress, most strongly associated with kinds of community participation that people did out of choice, rather than out of obligation, and primarily in their private lives.

Interim conclusion: social trust is related to participation

This preliminary evaluation of the data indicated that most (though not all) domains of community participation were associated with various measures of trust in others such that those who participated in their community more were also more trusting of people in general. This was broadly consistent with the hypothesis that community participation and levels of social trust would be positively and significantly associated. As were the correlations between

participation and distress, the magnitude of the associations between social trust and participation varied, though the correlations with trust were generally larger than those that had been obtained with distress. It was thus again appropriate to examine the partial correlations between the domains of participation and trust, so that the unique contribution of any one domain of participation to explaining differences in social trust might be identified.

DOMAINS OF PARTICIPATION AND SOCIAL TRUST: PARTIAL CORRELATIONS

To evaluate the unique contribution of each domain of participation to explaining differences in trust in others, partial correlation coefficients were computed. These are presented in Table 6.3. Partial correlations revealed that, when controlling for the effects of all other domains, five domains of participation made a unique contribution to explaining differences in most or all measures of trust. These were contact with friends, contact with neighbours, religious observance, organised community activities, and expressing opinions publicly. Three domains of participation that produced significant first-order correlations with trust did not produce significant partial correlations. These were contact with extended family, voluntary sector activity, and giving money to charity.

In addition, there were significant correlations between a domain of political participation, expressing opinions publicly, and all the sub-scales and the full scale of the *Organisational Trust Inventory*. Associations between the “negotiate honestly” and “reliable” sub-scales were positive. This indicated that higher levels of participation were associated with higher levels of social trust. However, the association between expressing opinions publicly and the “don’t take advantage” sub-scale of the *Organisational Trust Inventory* was negative, indicating that higher scores on expressing opinions publicly were associated with *lower* trust scores in terms of respondents accepting the proposition that most people avoid taking advantage of others. That is, contrary to the hypothesis, one measure of trust and one domain of participation were negatively correlated such that higher levels of participation were associated with lower levels of trust. This negative correlation was reflected in the full-scale *OTI* score, which also showed a significant negative correlation with expressing opinions publicly. These results may suggest that social trust and political participation are associated, but that any relationship between

them is perhaps dependent on the specific type of participation, or on the specific type of trust. This might be an interesting topic for further research.

Trust, and the super-domains and dimensions of participation

Partial correlation coefficients confirmed that, when controlling for other domains of community participation, five domains of participation were associated with most measures of trust. These domains were spread across each of the super-domains of community participation, with the highest correlations found between sub-scales of the *OTI* measure of trust and two of the key domains of informal social connectedness (contact with friends and contact with neighbours). These associations were positive, as expected, such that higher levels of participation were related to higher levels of social trust.

In terms of the dimensions of participation, with the exception of religious observance, higher levels of social trust were associated with domains of participation located towards the choice end of the choice-obligation dimension. They were evenly distributed along the public-private dimension, though the relationship between social trust and political participation was not clear-cut. In the main, higher levels of trust were associated with domains of participation that were part of private life, and undertaken out of choice more so than out of obligation. This paralleled the relationship between participation and distress, in which the lowest levels of distress were also associated with domains of participation that were part of private life, and undertaken primarily out of choice.

Interim conclusion: participation and trust

These results are interesting in terms of understanding the relationship between community participation and social trust. At the same time, based on this analysis of first-order and partial correlations, it might seem that trust and participation are not strongly linked: only a minority of domains of participation was associated with distress, and each of those only to a small degree. This proposition was tested by examining multiple correlations between domains of participation and trust, which were derived from a multiple regression analysis.

While the partial bivariate correlations between each of the domains of participation and trust were small (Table 6.3), the multiple correlation for all significant domains of participation taken together was in the moderate range (multiple $R=.34$, $p<.001$) (see Table 6.10).

Table 6.10. Summary of multiple regression analysis on social trust for significant domains of participation (full-scale OTI) (N=963).

Domains of participation	B	SE B	β	Multiple R	$R^2_{distress}$	p
Contact with friends	.12	.02	.18	.34	.12	.000
Contact with neighbours	.07	.02	.13			
Religious observance	.06	.02	.10			
Organised community activities	.05	.01	.12			
Expressing opinions publicly	-.09	.02	-.11			

In this model, it can be seen that the significant participation variables explained approximately 12% of variance in scores for trust ($R^2=.12$, $p<.001$). It could therefore be concluded that community participation was significantly, and non-trivially, associated with social trust.

The analyses of these data so far have revealed that, as predicted, participation and distress were linked, that participation and trust were linked, and, in a previous report also based on these data, that social trust and distress were linked (Berry & Rodgers, 2003). It was therefore appropriate to test the extent to which social trust mediated the relationship between participation and distress.

TRUST AS A MEDIATOR OF THE RELATIONSHIP BETWEEN PARTICIPATION AND DISTRESS

Assessing mediated relationships

Mediating relationships are those in which the association between a dependent variable (such as distress) and a predictor variable (such as participation) can be to some degree explained by their shared association with another predictor variable (such as social trust) (Baron & Kenny 1986, MacKinnon et al 2002). Theoretically, hypotheses about mediating relationships suggest causality. In this case, the hypothesis would be that, to some extent, participating in the community leads to increased levels of trust that, in turn, lead to lower levels of distress. Such a hypothesis cannot be confirmed by a mediation analysis of cross-sectional data. However, the hypothesis can be disconfirmed, and an assessment of the plausibility of the hypothesis may therefore be made. This may be achieved by conducting a mediation analysis based on

parameter estimates obtained from a hierarchical regression analysis. The mediation analysis allows the researcher to investigate whether or not, and the extent to which, an intermediate variable mediates the relationship between another predictor variable and a dependent variable.

Conducting a hierarchical regression involves including one or more independent variables together in a first step, and examining the relationship between these variables and a dependent variable, just as for a multiple regression (such as that shown in Table 6.10). Additional independent variables are then added in a second step, and the regression analysis run again. The magnitude of the relationship between the independent variables included in the first step and the dependent variable are then compared with the magnitude of the relationship between the same independent variables and the dependent variable following the addition of one or more additional independent variables in the second step. That is, changes in the magnitude and significance levels of the B or β estimates for the independent variables may be examined. The process of examining mediating relationships may be repeated until all the putative mediating variables have been included in the analysis.

Full compared with partial mediation

Mediating relationships can account for all, or for only part of the relationship between an independent and a dependent variable. Thus, the relationship between two variables can be fully or partly mediated. If the relationship between a domain of participation and distress were fully mediated by trust, then the B or β estimate for that domain would be reduced to zero, when measures of trust were added to the analysis. Similarly, if the relationship between a domain of participation and distress were *partly* mediated by trust, then the B or β estimate of that domain would be reduced. It might or might not remain statistically significant.

Selection and order of inclusion of variables must be theory-based and empirically tested

A note of caution is warranted in the use of this technique. Clearly, it would be possible to select any number of variables, and to try adding them to the regression in a variety of orders, with a view to selecting the most promising among the results of the analyses. It is therefore

essential in conducting mediation analyses to ensure, as is the case in this study, that the selection of variables, and the order of their inclusion, in the analysis be theory-driven. In this way, the plausibility of hypotheses may be validly tested and results accurately and meaningfully interpreted. An important process before applying this technique, therefore, was to select appropriate variables to include in the analysis, and to distinguish between covariates (such as socio-demographic factors) and mediating variables (such as trust). Covariates are added into the analysis at the outset, together with the independent variables, and the mediating variables follow in the second stage of the analysis.

SELECTING VARIABLES TO INCLUDE IN THE PRESENT MEDIATION ANALYSIS

Analyses of variance reported earlier in this chapter have led to the proposition that two socio-demographic factors (generation and paid work/study status), five domains of participation (extended family, friends, neighbours, organised community activities, and political protest), and two interaction terms (generation by friends, and paid work/study status by friends) were independently associated with general psychological distress. In addition, it has been shown that some of these domains of participation were independently associated with social trust. These were contact with friends, contact with neighbours, and organised community activities. In addition, social trust was bivariately associated with contact with extended family, and with political protest.

It was thus appropriate to consider the inclusion of these socio-demographic and participation variables in an analysis designed to test the plausibility of social trust as a mediator of the relationship between participation and distress. However, the multivariate relationships between the relevant socio-demographic factors, domains of participation, and all measures of trust and their interaction terms, had not been evaluated in a sequential multivariate model. This analysis was therefore undertaken. The results of the analysis of variance are presented in Table 6.11.

DESCRIBING A MULTIVARIATE RELATIONSHIP BETWEEN SOCIO-DEMOGRAPHIC FACTORS, PARTICIPATION, SOCIAL TRUST AND DISTRESS

The analysis of variance that included the trust variables was conducted in exactly the same way as the previous analyses of variance. That is, all relevant variables were included in the analysis. These were generation, paid work/study status, contact with extended family, contact with friends, contact with neighbours, organised community activities, political protest, and all four measures of trust (the *World Values Survey* item, and the three sub-scales of the *Organisational Trust Inventory*). Main effects for all variables were tested, as were all two-way interactions between the socio-demographic and participation variables, and the socio-demographic and trust variables, and the participation and trust variables. As before, non-significant interaction terms and main effects were removed from the analysis, one by one, until only significant variables and interaction terms remained. The non-significant *OTI* sub-scale “people negotiate honestly” was retained in the analysis because it was involved in a significant interaction term.

Table 6.11. Univariate analysis of variance for level of distress for significant socio-demographic factors, domains of community participation, four³⁰ measures of trust, and interaction terms.

Source of variation (distress)	Sums of squares	Degrees of freedom	Variance estimate	F-ratio	p	Partial η^2
Main effects						
<i>Generation</i>	247.70	2	123.85	4.76	.01	.01
<i>Paid work</i>	769.85	2	384.92	14.80	.00	.03
Extended family	513.34	1	513.34	19.74	.00	.02
Neighbours	259.36	1	259.36	9.98	.00	.01
Political protest	293.75	1	293.75	11.30	.00	.01
World Values trust	156.61	1	156.61	6.02	.01	.01
Negotiate honestly	41.51	1	41.51	1.60	.21	.00
Don't take advantage	1147.98	1	1147.98	44.15	.00	.04
Are reliable	684.65	1	684.65	26.33	.00	.03
Interactions						
Generation*negotiate honestly	183.80	2	91.90	3.53	.03	.01
Generation*don't take advantage	260.73	2	130.36	5.01	.01	.01
Generation*are reliable	419.62	2	209.81	8.07	.00	.02
Extended family*are reliable	374.24	1	374.24	14.39	.00	.02
Within groups (error)	24544.75	944	26.00			

³⁰ The main effect for “negotiate honestly” is not significant, but is retained in the model because it is part of a significant interaction term.

The results of the analyses indicated numerous main effects. There were also four significant interaction terms, three of which involved the socio-demographic variable, generation, and the three *OTI* sub-scales. This suggested that the generational differences in patterns of relationships between trust and distress reported by Berry & Rodgers (2003) persisted when other socio-demographic and participation variables were included in the analysis. With three significant interactions involving generation, it was appropriate to partition the sample and evaluate the relationship between socio-demographic factors, participation, trust, and distress separately for each generation. That is, partitioning the sample into three generations, and analysing the results separately for each, will simplify the interpretation of findings. The results of the analysis of variance reported in Table 6.11 are therefore not discussed further, and the mediation analysis is presented generation by generation, rather than for the whole sample.

GENERATIONAL DIFFERENCES IN THE RELATIONSHIP BETWEEN SOCIO-DEMOGRAPHIC FACTORS, PARTICIPATION, SOCIAL TRUST AND DISTRESS

In order to evaluate the relationship between socio-demographic factors, participation, trust, and distress separately for each generation, it was necessary to repeat all the analyses conducted on the whole sample for each generation in turn. That is, it was necessary to conduct an analysis of variance to assess the relationship between all socio-demographic factors and distress for each generation. It was then necessary to repeat the analysis of variance to assess the relationship between all domains of participation and distress controlling for the relevant socio-demographic factors for each generation. Finally, it was necessary to investigate the relationship between participation and distress, taking account of relevant socio-demographic factors and any mediating influence of trust for each generation. The results of these analyses are presented for each generation in turn below.

DISTRESS AMONG "GENERATION XERS"

There were 261 members of Generation X in this sample, 144 women and 117 men, aged from 19 to 40 years. The analysis of the relationship between participation and distress among members of Generation X began with a preliminary analysis of variance of the relationship between the six socio-demographic factors (sex, paid work/study status, level of education,

ethnicity, living alone, and having dependents), and the dependent variable, general psychological distress. All main effects and all two-way interactions were evaluated. Non-significant interaction terms were removed one at a time, starting with the term with the smallest *F* value, and the analysis was re-run after each removal. Non-significant main effects were also removed in the same manner, as long as they were not involved in a significant interaction term. In the final model, a significant main effect was found for level of education. There were no significant interactions between any of the socio-demographic factors and distress among Generation Xers. The final model is presented in Table 6.12.

Table 6.12. Univariate analysis of variance for level of distress for level of education for members of Generation X.

Source of variation (distress)	Sums of squares	Degrees of freedom	Variance estimate	<i>F</i> -ratio	<i>p</i>	Partial η^2
Between groups						
Level of education	318314.35	3	106104.78	2810.18	.00	.90
Within groups (error)	36246.95	960	37.76			

For ease of presentation, the results from Table 6.12 are also illustrated in Figure 6.5. As Figure 6.5 shows, members of Generation X who had a middle level of education reported lower levels of distress than both their low and high level of education peers.

Participation and distress, controlling for educational level among Generation Xers

Having identified that their level of education contributed to differences between respondents in levels of distress, the next step was to evaluate the relationship between participation and distress taking account of level of education. A second analysis of variance was therefore conducted to investigate the relationship between domains of participation and the dependent variable, general psychological distress, controlling for level of education, the socio-demographic factor that was significantly and uniquely associated with distress.

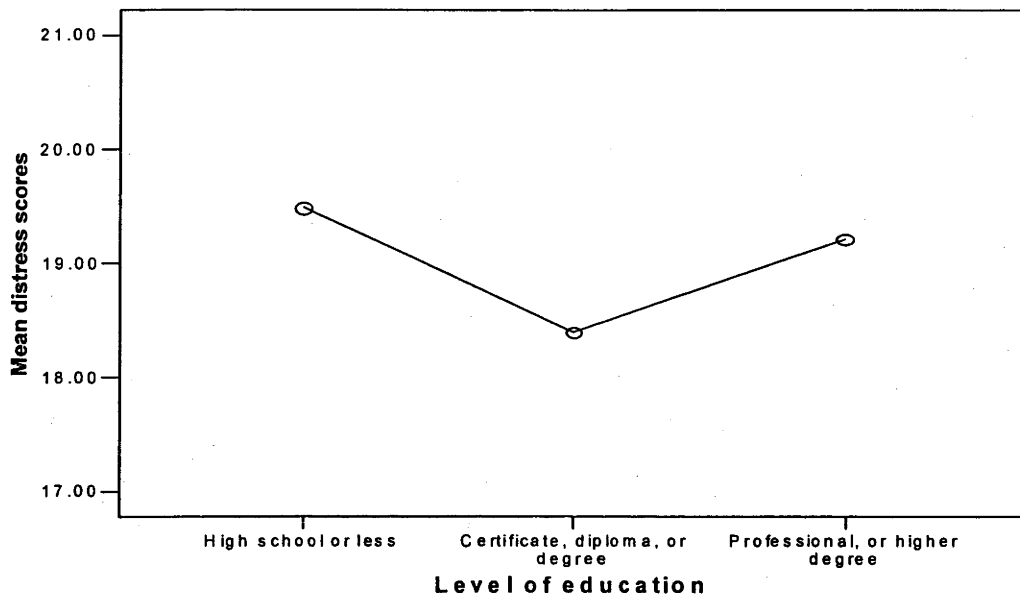


Figure 6.5. Mean levels of distress for members of Generation X by level of education.

Three domains of participation were uniquely associated with distress among Generation Xers

Main effects for all variables were evaluated, as were all two-way interactions between level of education and each domain of participation. Non-significant interaction terms and main effects were removed, one at a time, and the analysis repeated in the same manner as before. That is, non-significant interaction terms were removed, as were non-significant main effects, unless they were involved in a significant interaction term. The final model is presented in Table 6.13, which shows that the significant main effect for level of education remained.

Table 6.13. Univariate analysis of variance for level of distress for level of education and domains of participation for Generation X.

Source of variation (distress)	Sums of squares	Degrees of freedom	Variance estimate	F-ratio	p	Partial η^2
Between groups						
Level of education	12939.64	3	4313.21	109.73	.00	.56
Extended family	233.13	1	233.13	5.93	.02	.02
Neighbours	516.88	1	516.88	13.15	.00	.05
Religious observ.	119.59	1	119.59	3.04	.08	.01
Within groups (error)	10023.86	255	39.31			

Main effects were also found for three domains of participation (contact with extended family, contact with neighbours, and religious observance). There were no significant two-way interaction terms in this model. For comparative purposes, the main effects for level of education on differences in levels of distress, in a model that included the three relevant forms of community participation, are shown in Figure 6.6. As Figure 6 shows, when community participation was taken into account, those with higher levels of education reported fewer symptoms of distress.

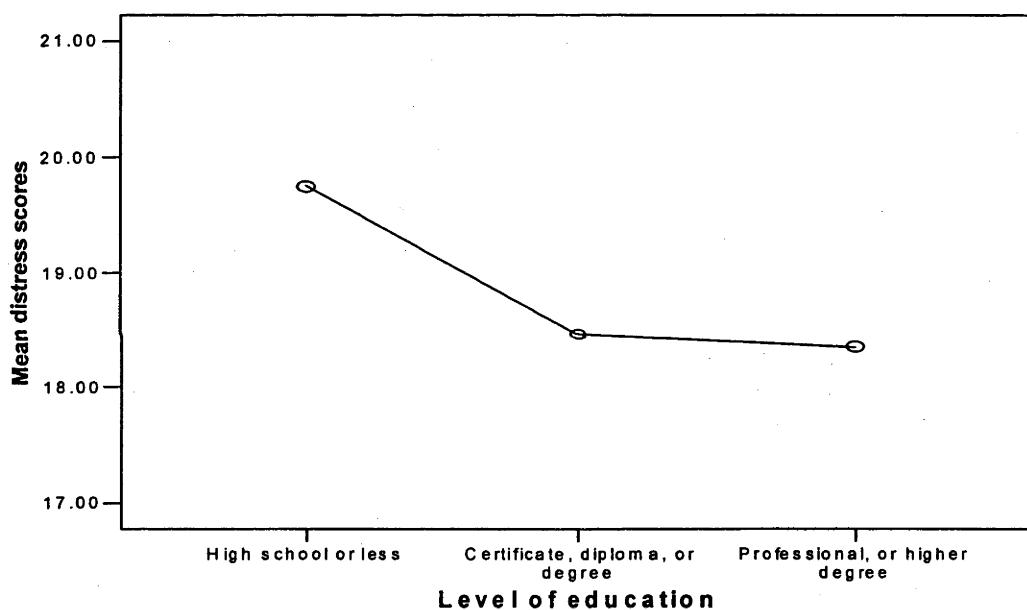


Figure 6.6. Mean levels of distress for members of Generation X by level of education, controlling for significant domains of participation.

Combined effects of domains of participation on psychological distress

The analyses of variance described above suggest a conclusion that contact with extended family and neighbours, religious observance, and level of education were separately associated with lower levels of general psychological distress. Thus, one socio-demographic factor and three domains of participation had independent associations with general psychological distress. These could be included in a model together with measures of trust.

Participation, trust and distress among Generation Xers

A third analysis of variance was conducted to examine main effects of, and interactions among, level of education, contact with extended family and neighbours, religious observance, and four measures of trust on levels of general psychological distress among members of Generation X. The results of the analysis of variance are presented in Table 6.14. Main effects for all variables were tested, as were all two-way interactions between the socio-demographic and participation variables, and the socio-demographic and trust variables, and the participation and trust variables. As before, non-significant interaction terms and main effects were removed from the analysis, one by one, until only significant variables and interaction terms remained. A significant interaction term is illustrated in Figure 6.7.

Table 6.14. Univariate analysis of variance for level of distress for socio-demographic factors, domains of community participation, measures of trust, and interaction terms for Generation X.

Source of variation (distress)	Sums of squares	Degrees of freedom	Variance estimate	F-ratio	p	Partial η^2
Main effects						
<i>Level of education</i>	3372.64	3	1124.21	36.97	.00	.30
Extended family	295.96	1	295.96	9.73	.00	.04
World Values trust	307.23	1	307.23	10.10	.00	.04
Don't take advantage	129.31	1	129.31	4.25	.04	.02
Are reliable	521.43	1	521.43	17.15	.00	.06
Interactions						
Extended family*people are reliable	186.56	1	186.56	6.13	.01	.02
Within groups (error)	7694.16	253	30.41			

The results of the analyses indicated main effects for level of education, contact with extended family, the World Values Survey trust item, and two of the *OTI* sub-scales, people avoid taking advantage of others, and people are reliable. Higher levels of education, contact with extended family, and trust were uniquely associated with lower levels of distress. In addition, the significant interaction term that was found between contact with extended family belief that most people are reliable showed that levels of distress were higher among those who did not believe most people were reliable, particularly when they did not have contact with their extended family. Thus, compared with high-trusters, distress was greater among low-trusters who did not have contact with their extended family.

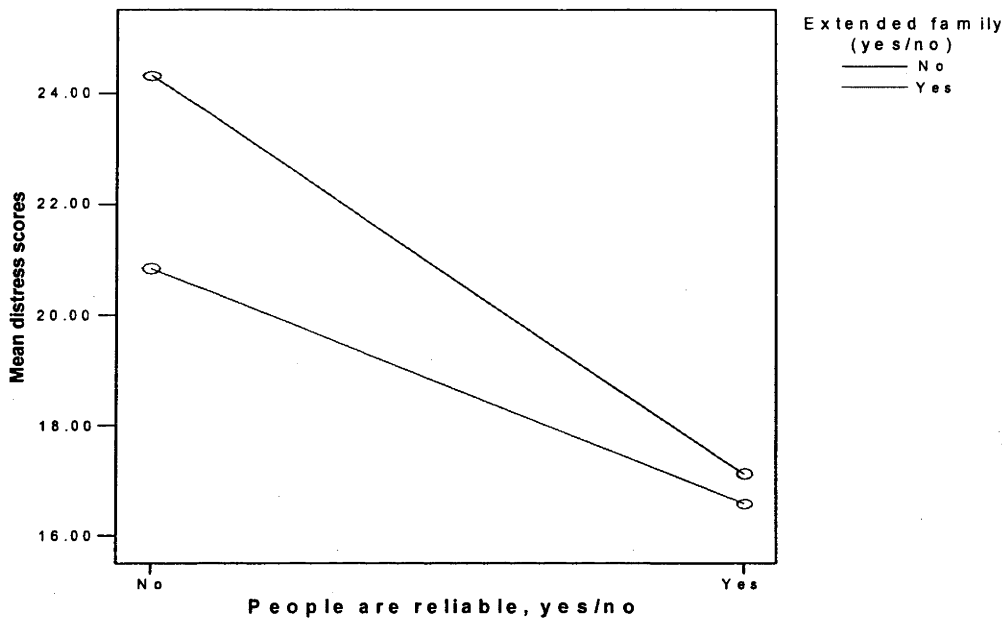


Figure 6.7. Mean distress scores for Generation X by degree of belief that most people are reliable, depending on degree of contact with extended family.

TRUST AS A MEDIATOR OF THE RELATIONSHIP BETWEEN PARTICIPATION AND DISTRESS AMONG GENERATION XERS

Having demonstrated that measures of trust were independently associated with distress in a model that also included relevant socio-demographic and participation variables, it was appropriate to conduct a mediation analysis to test the plausibility of the hypothesis that trust mediated the relationship between participation and distress among Generation Xers. This was accomplished by conducting a hierarchical regression analysis, as described earlier in this chapter. The relevant socio-demographic factor (years of education) and three participation variables (extended family, neighbours, and religious observance), derived from the analyses of variance, were included in the first step, and all four trust measures were added in the second step.

To assess any mediation effect, the B or β values for each domain of participation in the first step were compared with the B or β for the same domain of participation in the second step. Changes in either the unstandardised B estimates, or the standardised β values for each domain

of participation could have been evaluated, provided the same one is examined in both steps. In this case, the unstandardised B estimates were compared. The results of the analysis are presented in Table 6.15.

Trust mediated the relationships between neighbours and distress, and religious observance and distress

With a B value of $-.68$ in step 1, and of $-.69$ in step 2, there was no mediation effect of trust on the relationship between contact with extended family and levels of distress among Generation Xers. This indicated that, for Generation Xers, the relationship between contact with extended family and distress was entirely independent of their levels of social trust. However, the B estimates for contact with neighbours, and for religious observance, were reduced from step 1 to step 2 in both cases. For both domains of community participation, the B estimates were reduced in step 2 by around 60%, indicating that approximately 60% of the relationship between participation and distress was indirect. That is, about 40% of the associations between distress, and neighbours and religious observance, were independent of their relationship with trust, and about 60% were because these forms of participation were associated with increased levels of trust, which were in turn also related to lower levels of distress.

Table 6.15. Mediation effects of social trust on domains of community participation, controlling for relevant socio-demographic variables.

Domains of participation	Initial effect (B ₁)	Direct effect (B ₂)	Mediation effect (%) ³¹
<i>Generation X³²</i>			
Extended family	-.68	-.69	-1.47
Neighbours	-.86	-.34	60.47
Religious observance	-.52	-.20	61.54
<i>Baby Boomers³³</i>			
Household members	-.84	-.59	29.76
Extended family	-.22	-.14	36.36
Friends	-.83	-.47	43.37
Neighbours	-.51	-.37	27.45
Organised community activities	-.20	-.02	90.00
<i>Long Civic Generation³⁴</i>			
Friends	-.60	-.13	78.33
Giving money	-.14	.00	100.00
Expressing opinions publicly	.59	.37	37.29

³¹ Mediation effect = $100((B_1 - B_2)/B_1)$

³² Controlling for years of education.

³³ Controlling for ethnicity, paid work/study status, and living alone.

³⁴ Controlling for ethnicity, and living alone.

DISTRESS AMONG BABY BOOMERS

There were 364 Baby Boomers in this sample, 192 women and 172 men, aged between 41 and 58 years. The analysis of the relationship between participation and distress among Baby Boomers in this study also began with an analysis of variance of the relationship between socio-demographic factors and the dependent variable, general psychological distress, conducted just as before. That is, all main effects and all two-way interactions were evaluated. Non-significant interaction terms were removed one at a time, and non-significant main effects were also removed, as long as they were not involved in a significant interaction term. The results of the analysis are presented in Table 6.16.

Table 6.16. Univariate analysis of variance for level of distress for socio-demographic factors for Baby Boomers.

Source of variation (distress)	Sums of squares	Degrees of freedom	Variance estimate	F-ratio	p	Partial η^2
Main effects						
<i>Level of education</i>	333.35	2	166.67	4.41	.01	.02
Paid work/study status	78.52	2	39.26	1.04	.35	.01
Ethnicity	248.18	2	124.09	3.28	.04	.02
Living alone (yes/no)	191.13	1	191.13	5.06	.03	.01
Interactions						
Ethnicity*paid work	423.53	4	105.88	2.80	.03	.03
Within groups (error)	13303.62	352	37.79			

In the final model, significant main effects were found for level of education, paid work/study status, ethnicity and living alone. Like the results for the Generation Xers, Baby Boomers with medium levels of education reported fewer symptoms of distress than those with low or high levels of education. Those in full-time paid work or study, and those living with someone else, also reported fewer symptoms of distress than those not in full-time paid work or study and those living alone. Baby Boomers who were born overseas reported higher levels of distress than Indigeneous Baby Boomers, and non-Indigeneous Baby Boomers born in Australia.

There was one significant interaction term in the model. This was between ethnicity and paid work/study status. For ease of presentation, this interaction is illustrated in Figure 6.8. As this

figure shows, overseas born Baby Boomers had the highest levels of distress, and these were not much affected by paid work/study status. Australian-born non-Indigenous Baby Boomers reported the next highest levels of distress. Their distress levels were affected by paid work/study status, such that those in paid work reported fewer symptoms of distress than those not in paid work. Indigenous Baby Boomers tended to report lower levels of distress than other groups, especially those who were in part-time paid work or study. As the numbers of respondents in each of the nine groups involved in this interaction were very small, particularly the numbers of Indigenous Baby Boomers, no further comment on these results is made. However, the reasons behind differences in the levels of distress experienced by people of different ethnicity with respect to paid work/study status would be an appropriate topic for future research.

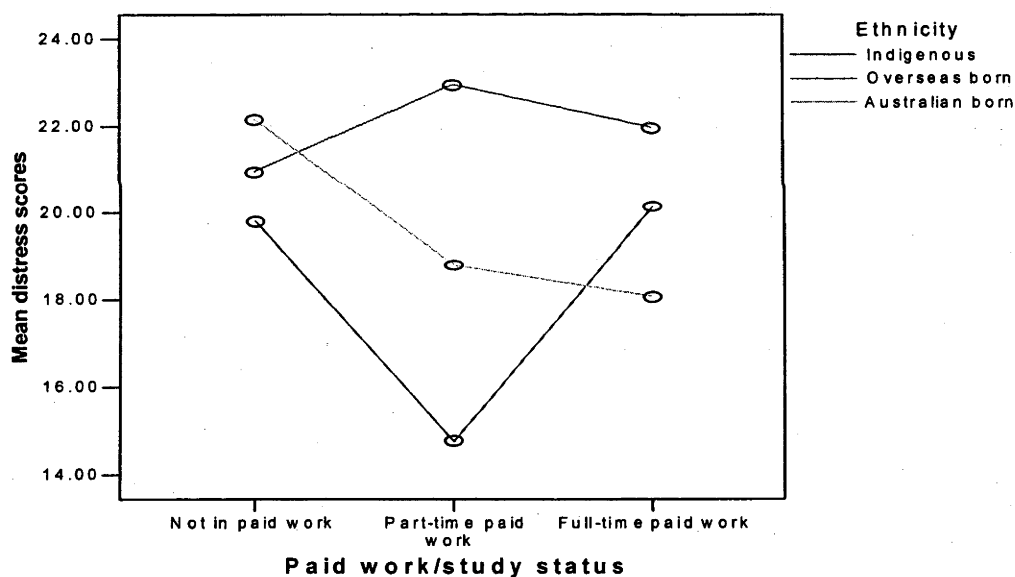


Figure 6.8. Mean levels of distress for Baby Boomers by paid work/study status for Indigenous Australians, overseas-born Australians, and non- Indigenous Australians.

Participation and distress among Baby Boomers, controlling for relevant socio-demographic factors

Having identified that level of education, paid work/study status, ethnicity, and living alone contributed to differences between respondents in levels of distress, the next step was to evaluate the relationship between participation and distress taking account of these socio-

demographic factors. A second analysis of variance was therefore conducted to investigate the relationship between domains of participation and the dependent variable, general psychological distress, controlling for four socio-demographic factors that were significantly and uniquely associated with distress.

Four domains of participation were uniquely associated with distress among Baby Boomers

Main effects for all variables were evaluated, as were all two-way interactions between each socio-demographic factor and each domain of participation. Non-significant interaction terms and main effects were removed, one at a time, and the analysis repeated in the same manner as before. That is, non-significant interaction terms were removed, as were non-significant main effects, unless they were involved in a significant interaction term. The final model is presented in Table 6.17.

Table 6.17. Univariate analysis of variance for level of distress for socio-demographic factors, domains of participation, and significant interaction terms for Baby Boomers.

Source of variation (distress)	Sums of squares	Degrees of freedom	Variance estimate	F-ratio	p	Partial η^2
Main effects						
Ethnicity	121.85	2	60.92	1.88	.15	.01
Paid work/study status	213.81	2	106.90	3.30	.04	.02
Living alone (yes/no)	14.11	1	14.11	.44	.51	.00
Household members	163.31	1	163.31	5.04	.03	.01
Extended family	278.95	1	278.95	8.61	.00	.02
Friends	288.78	1	288.78	8.91	.00	.03
Neighbours	266.32	1	266.32	8.22	.00	.02
Organised activities	24.88	1	24.88	.77	.38	.00
Interactions						
Ethnicity*extended family	256.20	2	128.10	3.95	.02	.02
Ethnicity*paid work	390.34	4	97.58	3.01	.02	.03
Ethnicity*organized activities	334.49	2	167.25	5.16	.01	.03
Paid work*extended family	245.39	2	122.70	3.79	.02	.02
Paid work*friends	376.29	2	188.15	5.81	.00	.03
Living alone*neighbours	173.22	1	173.22	5.35	.02	.02
Within groups (error)	11013.89	340	32.39			

This Table shows that, among the socio-demographic factors, only the main effect for paid work/study status remained significant. Significant main effects were also found for four domains of participation (contact with household members, with extended family, with friends, and with neighbours), such that Baby Boomers with higher levels of participation reported lower levels of distress. Main effects for ethnicity, for living alone, and for organised community activities were not significant, but were retained in the model because they were part of significant interaction terms.

Interactions between socio-demographic factors and participation

There were six significant two-way interaction terms in this model. Three of these involved ethnicity (ethnicity by extended family, by paid work/study status, and by organised community activities). As I have noted before, the numbers of respondents in each of these groups with respect to ethnicity were very small. Therefore, no further comment is made on these interaction terms, except to reiterate that research into the differential relationships between ethnicity, levels of participation, and distress might generate valuable findings. The three other significant interactions were between paid work status and contact with extended family, between paid work status and contact with friends, and between living alone and contact with neighbours. To aid interpretation of these three significant two-way interactions, they are illustrated in Figures 6.9 to 6.11. Scores for contact with extended family, friends and neighbours have been dichotomised for ease of presentation.

As Figure 6.9 shows, Baby Boomers who were in paid work, and those who had contact with their extended families, experienced lower levels of distress than those not in paid work and those who did not have contact with their extended families. The relationship between paid work and distress was stronger for those who had contact with their extended families, such that being in paid work together with having contact with extended family was especially strongly associated with lower levels of distress. Figure 6.10 shows that being in paid work and contact with friends were separately related to lower levels of distress, and that the latter relationship was particularly strong for those who were not in paid work or study. That is, Baby Boomers who were not in paid work derived greater benefits in terms of reduced distress levels by having contact with friends than did those in paid work.

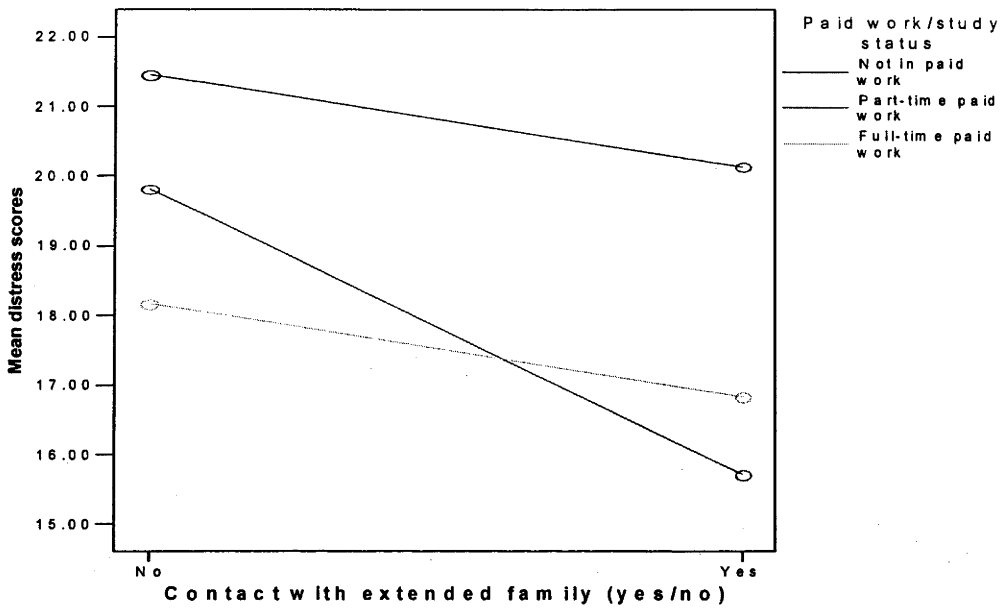


Figure 6.9. Mean levels of distress for Baby Boomers by paid work/study status and contact with extended family.

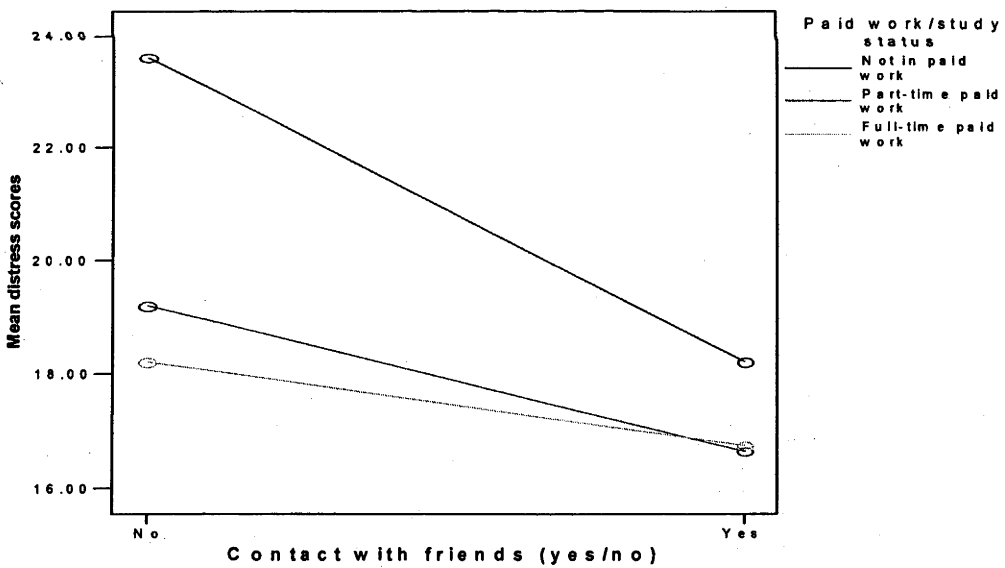
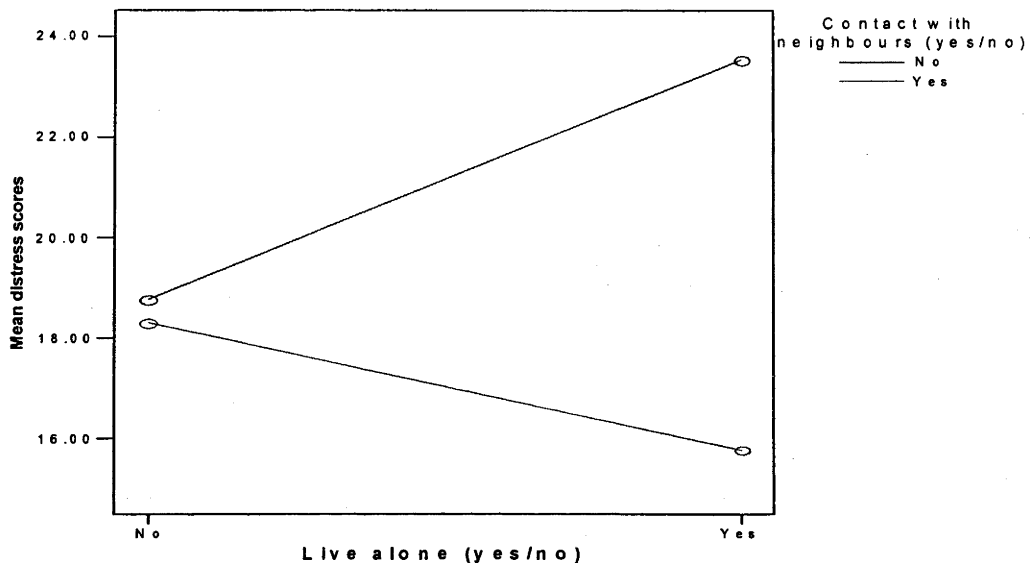


Figure 6.10. Mean levels of distress for Baby Boomers by paid work/study status and contact with friends.



Figure

6.11. Mean levels of distress for Baby Boomers by whether they were living alone, and by contact with neighbours.

Finally, as Figure 6.11 shows, there was a striking difference in the distress levels experienced by people who lived alone depending on whether they had contact with their neighbours. For those living alone, levels of distress were substantially higher for those who did not have contact with their neighbours.

Combined effects of domains of participation on psychological distress

The analysis of variance described above suggests a conclusion that being in paid work or study, together with contact with household members, with extended family, with friends, and with neighbours were all separately associated with lower levels of general psychological distress among Baby Boomers. However, the six significant interactions suggested that there was considerable complexity within these general trends. It was not possible, because of very small group sizes, to analyse in detail patterns of psychological distress among Baby Boomers of different ethnicity depending on their paid work status, or on their levels of contact with extended family and friends.

However, that these interactions were found would be an interesting topic for future research. Paid work/study status appeared in three of the six interactions, indicating that work status was an important and complex factor for Baby Boomers with respect to distress, and also worthy of further research. Generally, being in paid work was associated with fewer symptoms of distress in this sample of Baby Boomers, as were their informal social connections. One interesting exception with respect to informal social connections was that, for Baby Boomers not living alone, contact with neighbours was associated with greater, rather than reduced distress.

Participation, trust, and distress among Baby Boomers

Another analysis of variance was conducted to examine main effects and interactions among the relevant socio-demographic factors, community participation, and distress among Baby Boomers. Variables included in the analysis were ethnicity, paid work/study status, living alone, contact with household members, with extended family, with friends, and with neighbours, and four measures of trust. The results of this analysis of variance are presented in Table 6.18. Main effects for all variables were tested, as were all two-way interactions between the socio-demographic and participation variables, and the socio-demographic and trust variables, and the participation and trust variables. As before, non-significant interaction terms and main effects were removed from the analysis, one by one, until only significant variables and interaction terms remained.

Main effects

The results of the analyses indicated main effects for ethnicity, paid work/study status, living alone, contact with household members, with extended family, with friends, and with neighbours, and for two of the *OTI* sub-scales, belief that people negotiate honestly, and that people avoid taking advantage of others. The main effect for belief that people are reliable was not significant, but it was retained in the model because it was involved in two significant interaction terms. In sum, higher levels of distress were found among overseas-born Baby Boomers, among those not in paid work or study, and among those living alone. Fewer symptoms of distress were reported by those with higher levels of informal social connectedness, and among high trusters.

Table 6.18. Univariate analysis of variance for level of distress for socio-demographic factors, domains of community participation, measures of trust, and significant interaction terms for Baby Boomers.

Source of variation (distress)	Sums of squares	Degrees of freedom	Variance estimate	F-ratio	p	Partial η^2
Main effects						
Ethnicity	154.00	2	77.00	3.05	.05	.02
Paid work/study status	438.69	2	219.35	8.68	.00	.05
Living alone (yes/no)	119.51	1	119.51	4.73	.03	.01
Household members	168.80	1	168.80	6.68	.01	.02
Friends	175.22	1	175.22	6.94	.01	.02
Neighbours	299.72	1	299.72	11.87	.00	.03
Negotiate honestly	218.66	1	218.66	8.66	.00	.02
Don't take advantage	801.07	1	801.07	31.71	.00	.08
Are reliable	14.63	1	14.63	.58	.45	.00
Interactions						
Living alone*neighbours	208.62	1	208.62	8.26	.00	.02
Living alone*don't take advantage	109.13	1	109.13	4.32	.04	.01
Living alone*are reliable	386.53	1	386.53	15.30	.00	.04
Friends* are reliable	118.40	1	118.40	4.69	.03	.01
Household*negotiate honestly	113.46	1	113.46	4.49	.03	.01
Within groups (error)	8765.15	347	25.26			

Interactions

Five significant interaction terms were found, three of which involved living alone, and two of which involved belief that people are reliable. All three- and four-way interactions involving living alone and belief that people are reliable were therefore tested. As Table 6.19 shows, none was significant. The significant interaction between contact with neighbours and living alone with respect to levels of distress has been discussed and is illustrated in Figure 6.11. The four remaining significant two-way interaction terms are illustrated in Figures 6.12 to 6.15.

Figure 6.12 illustrates the relationship between distress and living alone for those who believe most people take advantage of others and those who do not. The first thing to note is that trusters reported much lower levels of distress than non-trusters.

Table 6.19. Univariate analysis of variance for level of distress for Baby Boomers for socio-demographic factors, domains of participation, two-way interactions, and non-significant three- and four-way interaction terms.

Source of variation (distress)	Sums of squares	Degrees of freedom	Variance estimate	F-ratio	p	Partial η^2
Main effects						
<i>Ethnicity</i>	153.67	2	76.83	2.99	.051	.02
Paid work/study status	408.45	2	204.23	7.96	.000	.04
Living alone (yes/no)	4.40	1	4.40	.17	.679	.00
Household members	153.24	1	153.24	5.97	.015	.02
Friends	198.44	1	198.44	7.74	.006	.02
Neighbours	.10	1	.10	.00	.951	.00
People negotiate honestly	186.09	1	186.09	7.25	.007	.02
People don't take advantage	11.57	1	11.57	.45	.502	.00
People are reliable	16.01	1	16.01	.62	.430	.00
Two-way interactions						
Living alone*neighbours	2.19	1	2.19	.09	.770	.00
Living alone*take advantage	3.82	1	3.82	.15	.700	.00
Living alone*are reliable	47.10	1	47.10	1.84	.176	.01
Friends*are reliable	114.03	1	114.03	4.44	.036	.01
Household*negotiate honestly	100.16	1	100.16	3.90	.049	.01
Three- and four-way interactions						
Living alone*neighbours* take advantage	4.39	2	2.20	.09	.918	.00
Living alone*neighbours* are reliable	9.83	2	4.92	.19	.826	.00
Living alone*take advantage*are reliable	.90	2	.45	.02	.983	.00
Neighbours*take advantage*are reliable	.01	1	.01	.00	.983	.00
Living alone*neighbours* take advantage*are reliable	.01	1	.01	.00	.988	.00
Living alone*friends* reliable	.49	1	.49	.02	.890	.00
Within groups (error)	8671.16	338	25.65			

However, the more trusting respondents' levels of distress were not associated with whether they lived alone or not. But for the less trusting respondents, living alone was associated with more symptoms of distress than not living alone, with those living alone showing very high levels of distress. Thus, living with someone was associated with lower levels of distress for non-trusters.

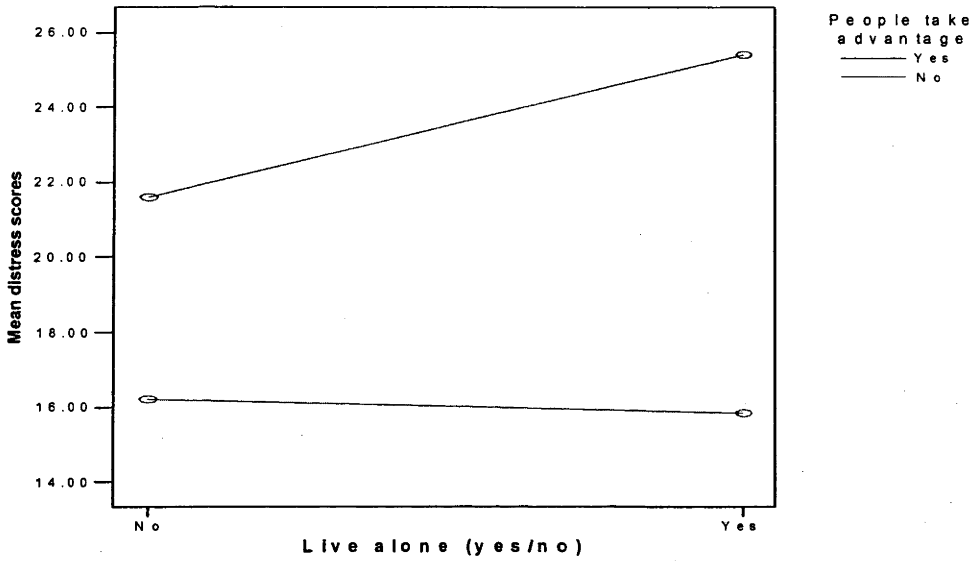


Figure 6.12. Mean levels of distress for Baby Boomers for those living alone and not living alone depending on whether they think people take advantage of others.

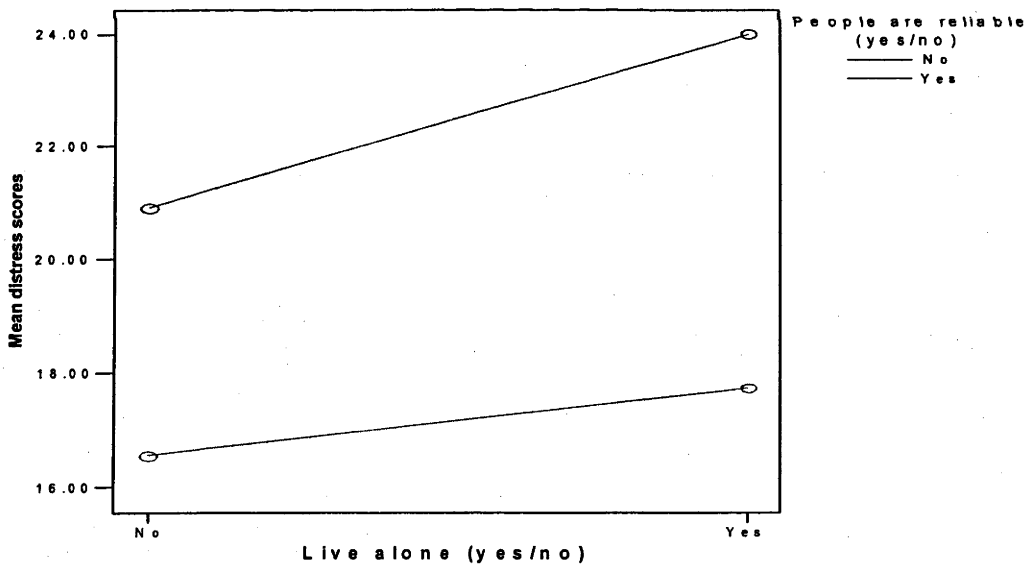


Figure 6.13. Mean levels of distress for Baby Boomers for those living alone and not living alone depending on whether they think most people are reliable.

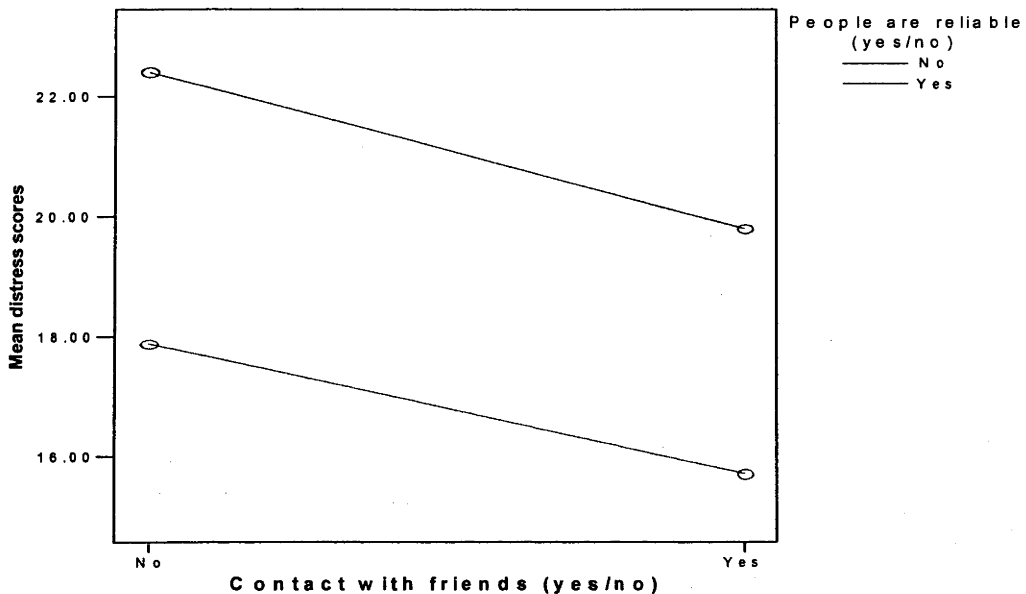


Figure 6.14. Mean levels of distress for Baby Boomers for those who see their friends and those who do not depending on whether they think most people are reliable.

Figure 6.13 tells much the same story in terms of whether respondents thought most people were reliable or not. Again, non-trusting Baby Boomers living alone had the highest levels of distress of all. Figure 6.14 illustrates the relationship between levels of distress and trust depending on whether respondents reported having contact with friends or not. Again, non-trusters reported much higher levels of distress than their more trusting peers, and higher still if they did not have contact with friends.

Finally, Figure 6.15 shows the relationship between levels of distress and trust (in this case, belief that most people negotiate honestly) depending on whether respondents reported having contact with household members or not. The more trusting Baby Boomers reported much lower levels of distress than the less trusting respondents, and their levels of distress were not associated with whether they had contact with household members. However, the less trusting Baby Boomers reported fewer symptoms of distress when they had contact with household members. That is, having contact with household members was related to lower levels of distress for non-trusters of this generation.

Summing up the main effects and interactions

In the main, Baby Boomers who were in paid work or study, or who were born in Australia, or who lived with someone else, reported lower levels of distress than those who were unemployed, or who were born overseas, or who lived alone. Those who had more contact with household members, with friends, and with neighbours also reported lower levels of distress than their less connected peers. And the more trusting respondents had lower levels of distress than the less trusting respondents.

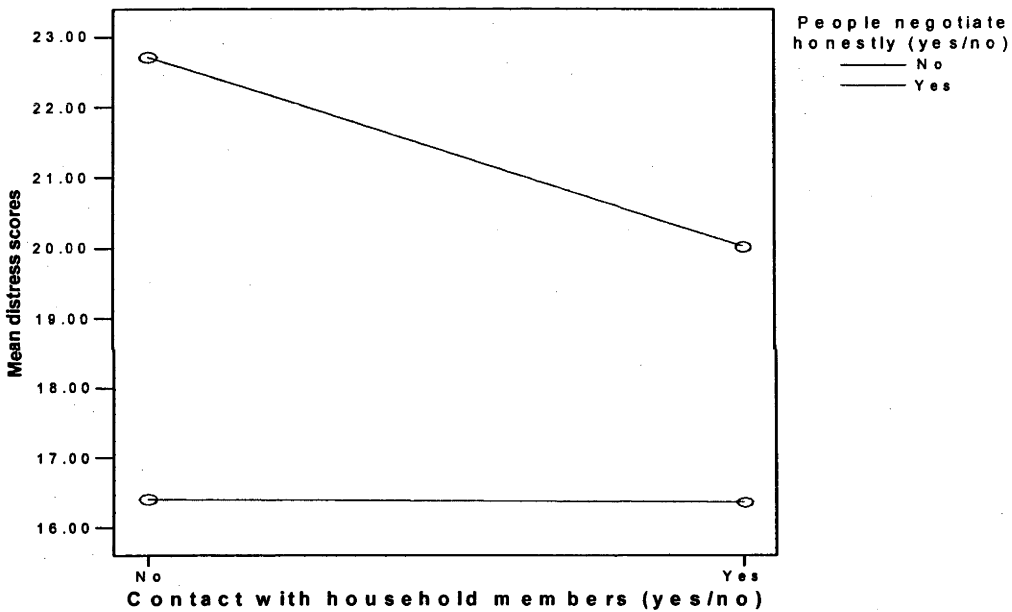


Figure 6.15. Mean levels of distress for Baby Boomers depending on whether they have contact with household members and on whether they think most people negotiate honestly.

However, there were some subtleties within these general patterns for some Baby Boomers. For unemployed respondents, informal social connections were particularly strongly related to lower levels of against distress, as they were for non-trusting respondents. While in all cases the distress levels of unemployed and non-trusting respondents were higher than those for employed and trusting respondents, their distress levels were relatively lower the more connected they were.

TRUST AS A MEDIATOR OF THE RELATIONSHIP BETWEEN PARTICIPATION AND DISTRESS AMONG BABY BOOMERS

For the Baby Boomers, like for the Generation Xers, measures of trust were independently associated with distress in a model that also included relevant socio-demographic and participation variables. It was therefore appropriate to conduct a mediation analysis to test the plausibility of the hypothesis that trust mediated the relationship between participation and distress among Baby Boomers. This was accomplished by conducting a hierarchical regression analysis, as described earlier in this chapter. The relevant socio-demographic and participation variables, derived from the analyses of variance, were included in the first step. These were ethnicity, paid work/study status, and living alone, together with contact with household members, extended family and friends. The four trust measures were added in the second step.

The unstandardised B estimates for each domain of participation in the first step were compared with the B estimates for the same domain of participation in the second step. Percent changes in the B estimates were computed for each domain of participation to indicate the magnitude of the mediation effect of trust. The results of the analysis are reported in Table 6.15.

Trust mediated the relationships between all relevant domains of participation and distress for Baby Boomers

In all cases, the B estimates for the participation variables in the second step were smaller than they were in the first step, indicating that, for Baby Boomers, trust mediated the relationship between all relevant domains of participation and distress. With a B value of $-.84$ in the first step, and of $-.59$ in the second, the mediation effect of trust on contact with household members was around 30%. It was a little less than 30% for contact with neighbours, and a little more than 30% for extended family. For contact with friends, the mediation effect of trust was over 40%. Thus, with respect to the domains of informal social connectedness, and in their private lives, around one-third of the beneficial effects of participation were because higher levels of participation were associated with higher levels of trust. For organised community activities, the mediation effect of trust was 90%, suggesting that almost all of the beneficial effect of this domain of civic engagement was because getting involved in organised activities is associated with higher levels of trust.

Thus, for Baby Boomers, depending on the type of participation, between 10% and 70% of the associations between participation and distress were independent of their relationship with trust, and between 30% and 90% were because higher levels of participation were associated with higher levels of trust, which were in turn related to lower levels of distress.

DISTRESS AMONG LONG CIVICS

There were 338 members of the Long Civic Generation in this sample, 164 women and 174 men, aged between 59 and 97 years. The analysis of the relationship between participation and distress among Long Civics in this study began, as for the other generations, with an analysis of variance of the relationship between socio-demographic factors and the dependent variable, general psychological distress. Again, all main effects and all two-way interactions were evaluated. Non-significant interaction terms were removed one at a time, and non-significant main effects were also removed, as long as they were not involved in a significant interaction term. The results of the analysis are presented in Table 6.20.

Table 6.20. Univariate analysis of variance for level of distress for ethnicity and living alone for members of the Long Civic Generation.

Source of variation (distress)	Sums of squares	Degrees of freedom	Variance estimate	F-ratio	p	Partial η^2
Main effects						
<i>Ethnicity</i>	216.25	2	108.13	4.11	.02	.02
<i>Living alone</i>	110.11	1	110.11	4.18	.04	.01
Interaction						
<i>Ethnicity*living alone</i>	457.82	2	228.91	8.69	.00	.05
Within groups (error)	8743.73	332	26.34			

In the final model, significant main effects were found for ethnicity and living alone. Overseas-born members of the Long Civic Generation reported the lowest levels of distress, followed by non-Indigenous Australian-born respondents. Indigenous respondents reported the highest levels of distress. Long Civics living alone reported higher levels of distress than those who did not live alone.

There was one significant interaction term in the model. This was between ethnicity and living alone. For ease of presentation, this interaction is illustrated in Figure 6.16.

Non-Indigenous Australian-born members of the Long Civic Generation reported higher levels of distress when they lived alone than when they did not live alone. In other words, among these respondents, living with someone was associated with lower levels of distress. However, the overseas born and Indigenous Long Civics showed the opposite trend. Both groups reported lower levels of distress when they lived alone than when they lived with someone else. Thus, for these two groups, living alone was related to lower levels of distress.

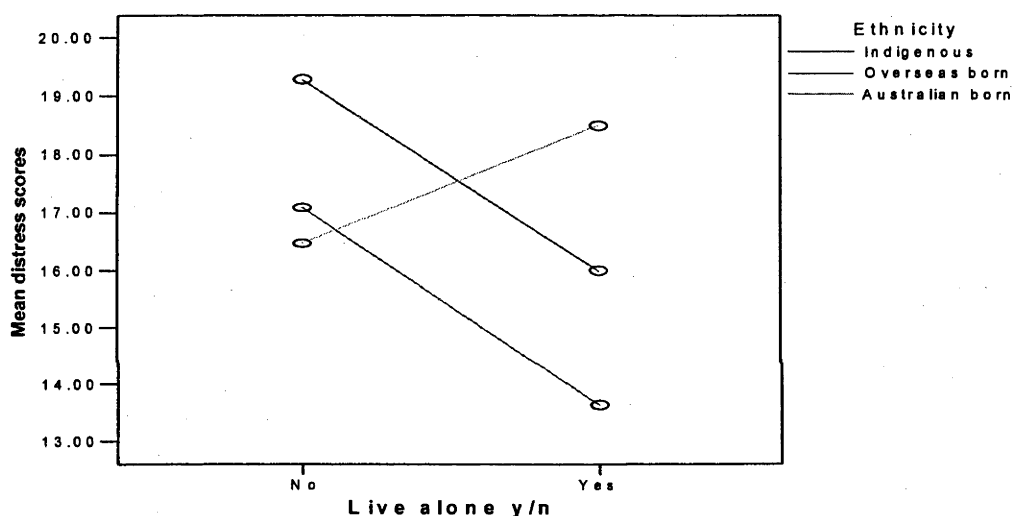


Figure 6.16. Mean levels of distress for Indigenous, overseas-born, and non-Indigenous members of the Long Civic Generation depending on whether they live alone.

Participation and distress among Long Civics, controlling for relevant socio-demographic factors

Having identified that ethnicity, and living alone contributed to differences between respondents in levels of distress, the next step was to evaluate the relationship between participation and distress taking account of these socio-demographic factors. A second analysis of variance was therefore conducted to investigate the relationship between domains of participation and the dependent variable, general psychological distress, controlling for the two socio-demographic factors that were significantly and uniquely associated with distress.

Two domains of participation were uniquely associated with distress among Long Civics

Main effects for all variables were evaluated, as were all two-way interactions between each socio-demographic factor and each domain of participation. Non-significant interaction terms and main effects were removed, one at a time, and the analysis repeated in the same manner as before. That is, non-significant interaction terms were removed, as were non-significant main effects, unless they were involved in a significant interaction term. The final model is presented in Table 6.21.

Table 6.21. Univariate analysis of variance for level of distress for socio-demographic factors, domains of participation, and significant interaction terms for Long Civics.

Source of variation (distress)	Sums of squares	Degrees of freedom	Variance estimate	F-ratio	p	Partial η^2
Main effects						
Ethnicity	164.41	2	82.21	3.27	.04	.02
Living alone (yes/no)	118.04	1	118.04	4.69	.03	.01
Friends	105.58	1	105.58	4.20	.04	.01
Giving money	71.58	1	71.58	2.85	.09	.01
Expressing opinions	133.35	1	133.35	5.30	.02	.02
Interactions						
<i>Ethnicity*living alone</i>	362.04	2	181.02	7.20	.00	.04
Living alone*giving money	221.37	1	221.37	8.80	.00	.03
Within groups (error)	8249.14	328	25.15			

As Table 6.21 shows, main effects remained for both socio-demographic factors when domains of participation were included in the model. Significant main effects were also found for two domains of participation (contact with friends and expressing opinions publicly). Members of the Long Civic Generation that reported higher levels of contact with friends reported lower levels of distress. However, those who reported higher levels of expressing opinions publicly reported higher levels of distress (Spearman's $r_{distress} = .13, p = .01$), such that this form of participation was not related to lower levels of distress, but to higher levels of distress. The main effect for giving money to charity was not significant but was retained in the model because it was part of a significant interaction term.

Interactions between ethnicity, living alone and giving money

There were two significant two-way interaction terms in this model, both involving ethnicity. They were ethnicity by living alone, and ethnicity by giving money to charity. As both involved ethnicity, the three-way interaction between these variables was tested but, as Table 6.22 shows, this was not significant. The interaction between ethnicity and living alone was the same as that illustrated in Figure 6.16, and is not described again here.

Table 6.22. Univariate analysis of variance of distress showing non-significant three-way interaction term for Long Civics.

Source of variation (distress)	Sums of squares	Degrees of freedom	Variance estimate	F-ratio	p	Partial η^2
Main effects						
Ethnicity	50.11	2	25.05	.99	.374	.01
Living alone (yes/no)	34.33	1	34.33	1.35	.246	.00
Friends	105.74	1	105.74	4.17	.042	.01
Giving money	14.17	1	14.17	.56	.455	.00
Expressing opinions	117.79	1	117.79	4.64	.032	.01
Interactions						
<i>Ethnicity*living alone</i>	70.60	2	35.30	1.39	.250	.01
Living alone*giving money	79.59	1	79.59	3.14	.078	.01
Ethnicity*living alone*giving money	27.00	4	6.75	.27	.900	.00
Within groups (error)	8222.14	324	25.38			

Figure 6.17 illustrates the interaction between living alone and giving money to charity, scores for which have been dichotomised for ease of presentation and interpretation. As Figure 6.17 shows, those who lived with someone else reported the same levels of distress whether or not they gave money to charity. But those who lived alone, and who also did *not* give money to charity, reported substantially higher levels of distress than their peers who did give money to charity. That is, distress increased with living alone for those who did not give money to charity, but it decreased for those who did give money to charity.

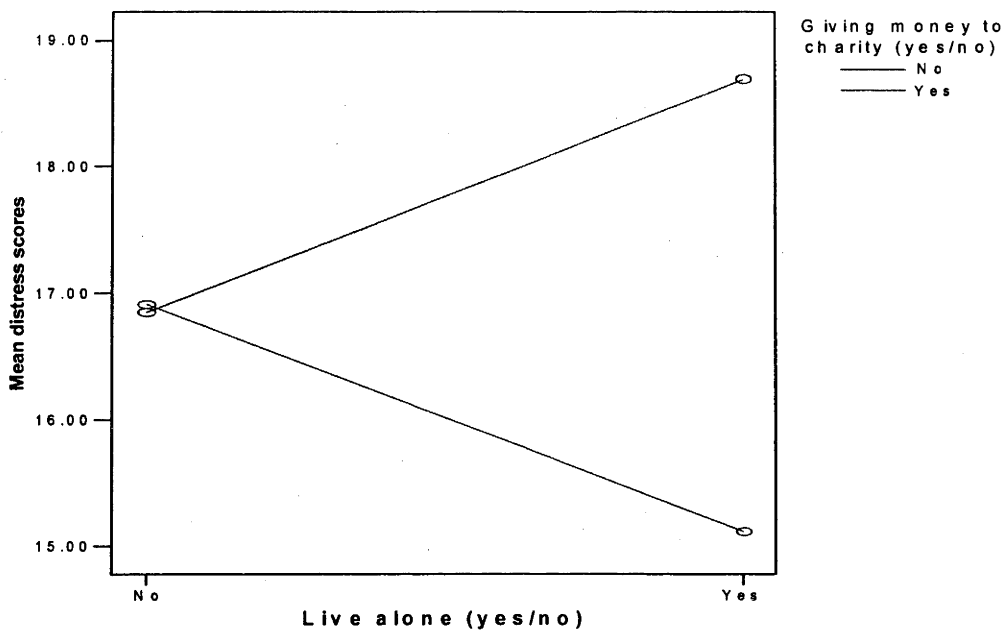


Figure 6.17. Mean levels of distress for members of the Long Civic Generation depending on whether they live alone, and on whether they give money to charity.

Combined effects of domains of participation on psychological distress

The analysis of variance described above suggests a conclusion that being overseas-born, living with someone else, having contact with friends, and not expressing opinions publicly were all separately associated with lower levels of general psychological distress among members of the Long Civic Generation. In addition, the interaction terms suggested that the psychological benefits of living with someone else were confined to non-Indigenous Australian-born Long Civics, and the benefits of giving money to charity were confined to those living alone.

Participation, trust, and distress among Long Civics

A final analysis of variance was conducted to examine main effects and interactions among ethnicity, living alone, contact with friends, giving money to charity, expressing opinions publicly, along with the four measures of trust in predicting levels of general psychological distress among Long Civics. The results of the analysis of variance are presented in Table 6.23.

Table 6.23. Univariate analysis of variance of level of distress for socio-demographic factors, domains of community participation, measures of trust, and interaction terms for the Long Civic Generation.

Source of variation (distress)	Sums of squares	Degrees of freedom	Variance estimate	F-ratio	p	Partial η^2
Main effects						
<i>Ethnicity</i>	219.35	2	109.67	4.95	.01	.03
Living alone	82.00	1	82.00	3.70	.06	.01
Don't take advantage	339.67	1	339.67	15.33	.00	.04
Are reliable	148.03	1	148.03	6.68	.01	.02
Interactions						
Ethnicity*living alone	355.22	2	177.61	8.02	.00	.05
Within groups (error)	7310.84	330	22.15			

Main effects for all variables were tested, as were all two-way interactions between the socio-demographic and participation variables, and the socio-demographic and trust variables, and the participation and trust variables. As before, non-significant interaction terms and main effects were removed from the analysis, one by one, until only significant main effects and interaction terms remained.

Main effects and interactions

The results of the analyses indicated main effects for ethnicity and living alone, and for two of the *OTI* sub-scales, belief that people avoid taking advantage of others, and that people are reliable. In sum, higher levels of distress were found among Indigenous and non-Indigenous Australian-born members of the Long Civic Generation, and among those living alone. Those with higher levels trust reported lower levels of distress. The interaction between ethnicity and living alone remained when the trust variables were included in the analysis. For the sake of completeness, it is presented in figure 6.18, but is not further interpreted here.

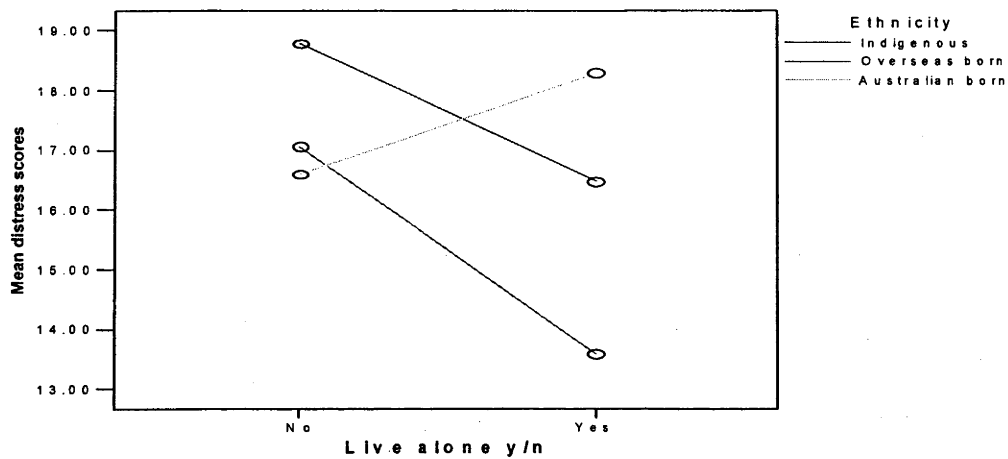


Figure 6.18. Mean levels of distress for members of the Long Civic Generation, living alone or with someone, for Indigenous Australians, overseas-born Australians, and non-Indigenous Australians, in a model containing significant domains of participation and measures of trust.

TRUST AS A MEDIATOR OF THE RELATIONSHIP BETWEEN PARTICIPATION AND DISTRESS AMONG LONG CIVICS

For the members of the Long Civic Generation, as for the other two generations, measures of trust were independently associated with distress in a model that also included relevant socio-demographic and participation variables. It was therefore appropriate to conduct an analysis to test the plausibility of the hypothesis that trust mediated the relationship between participation and distress among Long Civics. This was accomplished by conducting a hierarchical regression analysis, as described earlier in this chapter. The relevant socio-demographic and participation variables, derived from the analyses of variance, were included in the first step. These were ethnicity, living alone, contact with friends, giving money to charity, and expressing opinions publicly. The four trust measures were added in the second step. As for the other generations, the unstandardised B estimates for each domain of participation in the first step were compared with the B estimates for the same domain of participation in the second step. Percent changes in the B estimates were computed for each domain of participation to indicate the magnitude of the mediation effect of trust. The results of the analysis are reported in Table 6.15.

Trust mediated the relationships between participation and distress for Long Civics

In all cases, the unstandardised B estimates for the participation variables in the second step were smaller than they were in the first step, indicating that, for members of the Long Civic Generation, trust mediated the relationship between all relevant domains of participation and distress. With a B value of $-.60$ in the first step, and of $-.13$ in the second, the mediating effect of trust for contact with friends was around 80%. It was 100% for giving money to charity, and nearly 40% for expressing opinions publicly. Thus, for members of the Long Civic Generation, depending on the type of participation, between 40% and 100% of the relationship between domains of participation and distress was indirect, through their association with trust, which was in turn related to distress.

Two comments on the results of the mediation analysis for this generation should be made. The first is to note that the main effect for giving money was not significant in the first model, but was included in the mediation analysis because the analysis of variance had shown that it was part of a significant interaction. Nevertheless, any slight association it may have had with levels of distress was entirely mediated when the trust variables were entered in the second model. Secondly, the association between expressing opinions publicly and distress was positive, such that more frequent public expression of opinions was related to higher levels of distress. Expressing opinions publicly showed a trend towards being negatively associated with trust, with more frequent expressing opinions publicly related to lower levels of trust (Spearman's r trust = $-.07$, $p = .174$). While this correlation was not significant, it was not in the expected direction in terms of the hypotheses for this study as set out in Chapter 1. However, it was commensurate with the findings of the analysis predicting distress reported earlier in this chapter.

OVERVIEW OF CHAPTER FINDINGS: PARTICIPATION, DISTRESS, AND THE MEDIATING ROLE OF TRUST IN THREE GENERATIONS OF RURAL AUSTRALIAN ADULTS

The analyses presented in this chapter show that different socio-demographic factors and different domains of community participation are associated, via social trust, with different levels of distress in each generation. The findings for each generation are summarised below.

Factors associated with distress among Generation Xers

When all socio-demographic factors, all domains of participation, and all measures of trust were taken into account simultaneously, one socio-demographic factor (level of education), one domain of community participation (contact with extended family), three measures of trust (the World Values Survey item, and belief that people avoid taking advantage and are reliable), and one interaction between these variables (contact with extended family by belief that people are reliable) made unique contributions to explaining differences in distress among members of Generation X. That is, more highly educated Generation Xers who had contact with their extended families and who were trusting in their attitudes to other people reported lower levels of distress than their less educated, less connected, and less trusting peers. Trust (specifically belief that people are reliable), was particularly strongly related to distress among those Generation Xers who did not have contact with their extended families.

The effects of participation on distress were partly direct, and partly indirect, through the trust variables. When all measures of trust were considered together, the relationship between contact with extended family and distress was entirely direct. That is, contact with extended family was related to lower levels of distress irrespective of how much respondents trusted, or did not trust other people. This was partly true of the other two domains of participation. But some of the effects of participation on distress were also due to their association with trust. That is, Generation Xers who spent more time with neighbours and in religious observance, and those who were more trusting, reported lower levels of distress than those who participated less, and who were less trusting. About 40% of the relationship with lower levels of distress was directly because of higher levels of participation, while about 60% was because higher levels of participation were associated with higher levels of trust.

Factors associated with distress among Baby Boomers

Three socio-demographic factors (ethnicity, paid work/study status, and living alone), three domains of community participation (contact with household members, friends, and neighbours), two measures of trust (belief that people negotiate honestly and that people avoid taking advantage of others), and five interactions between these variables made significant, unique contributions to explaining differences in distress among Baby Boomers.

Overall, Baby Boomers who were born in Australia, had paid work or study, who did not live alone, who had contact with household members, friends, and neighbours, and who believed that most people negotiate honestly and avoid taking advantage of others reported lower levels of distress than their overseas born, unemployed, less connected, and less trusting peers.

With the exception of one domain of civic engagement, the effects of participation on distress among Baby Boomers were mainly direct and, in all cases, participating in the community was associated with lower levels of distress. However, a substantial proportion of the effects of participation on distress was indirect. For most significant domains of participation, around one-third of the relationship between participation and distress could be explained by supposing that participating in the community was associated with higher levels of trust, which were in turn associated with lower levels of trust. In the case of getting involved in organised community activities, the relationship between participation and distress was almost entirely (90%) explained by the association between organised activities and trust.

Factors associated with distress among Long Civics

When the relevant socio-demographic factors, all domains of participation, and all measures of trust were taken into account, two socio-demographic factors (ethnicity, and living alone), two measures of trust (belief that people avoid taking advantage of others, and that most people are reliable), and one interaction between ethnicity and living alone made independent contributions to explaining differences in distress among members of the Long Civic Generation. That is, members of the Long Civic Generation who were born overseas, who did not live alone, and who believed that most people avoid taking advantage of others and are reliable reported lower levels of distress than their Australian-born (especially Indigenous) peers who lived alone and were not trusting of most people. The exception to this was that Indigenous and overseas-born members of the Long Civic Generation reported fewer symptoms of distress when they lived alone, rather than when they lived with someone else. It is noteworthy that, for the model including all significant variables, no domain of participation added to the explanation of differences in distress scores for this sample of older Australians.

For this generation, the effects of participation on distress were mainly indirect, in that most of the relationship between participation and distress was due to their shared relationship with trust. In the case of giving money to charity, the relationship between this domain of participation and distress was entirely due to its association with trust. However, trust played a smaller part in the relationship between expressing opinions publicly and distress, such that the relationship was not primarily due to shared associations with trust.

CHAPTER 7: CONCLUSIONS

CHAPTER SUMMARY

This chapter starts by presenting a summary of research findings from the thesis, including discussion of the degree to which the findings are consistent with the hypotheses and with the findings of previous research. This leads into a discussion of the theoretical implications of the findings, and a commentary on research methods. The limitations of the study are discussed next, and possible directions for future research are outlined. These include potential "next steps" that follow directly from this study, and indicate where research in this field might proceed more generally. Practical implications of the findings are reviewed, particularly with respect to public policy and program development in mental health, and final conclusions are drawn.

ANSWERING THE RESEARCH QUESTIONS

This thesis has addressed two research questions. One was to do with whether volitional community participation is a unitary concept, or whether it is made up of discrete components that are structured and interactive in their relationships. The other question was about whether community participation is related to mental health, and about the nature of this relationship. To address these questions, a purpose-designed study was carried out. *The Eurobodalla Study* was conducted in 2001-2002 using a stratified random general population sample of 963 adults aged 19 to 97 years.

Community participation is a multifaceted phenomenon

As there is no existing measure of volitional community participation suitable for addressing these research questions, a major part of this study has been to undertake preliminary work in developing one. In doing so, I have shown that volitional community participation is made up

of fourteen discrete components, or “domains”. These are different ways in which people can join in the lives of their communities. Most, though not all, of these domains are related to one another, and people who are involved in one domain are more likely than other people to be involved in another domain. This is reflected in findings that indicate that some people can be described as participators, while others are non-participators.

The domains of participation can be organised within a super-structure that contains three major components, or “super-domains” of participation. As expected, these included *informal social connectedness*, *civic engagement*, and *political participation*. Of particular interest was the discovery of a fourth super-domain, *social contact with workmates*, and the discovery that contact with household members did not fit within the super-domains of participation. Analysing the dimensions of participation revealed that both these domains stood out from all other domains in that they were perceived not so much as volitional forms of participation, but as obligation based activities.

An analysis of types of people in terms of their patterns of participation revealed seven types of participators in the community. Most of these types were defined primarily by their sex and generation. But one type was not, the elite connectors, and this type was of particular theoretical interest because their patterns of participation were very different from those of the other six types. Elite connectors, who were mainly male and middle-aged, and their role in the communities of the Eurobodalla Shire are discussed in more detail later.

Community participation is related to psychological distress

I have shown that community participation is related to psychological distress, and that the relationship is complex, and possibly mediated by social trust at least in part. Not all forms of participation are related to distress. The key domains of informal social connectedness play a primary role in linking participation and distress, and also in the relationship that both have with social trust. Intergenerational differences in levels and patterns of participation were systematically related to social trust and distress, with the Long Civic Generation the most trusting and the least distressed, and Generation X the least trusting and the most distressed.

UNDERLYING STRUCTURES AND DYNAMICS OF COMMUNITY PARTICIPATION

The associations among the domains of participation are not random, but patterned, and can be organised into categories of like activities. These constitute three “super-domains” of volitional community participation: informal social connectedness; civic engagement; and political participation. The domains can also be ordered according to the extent to which they are private or public kinds of activities, and according to whether people do them primarily because they want to, rather than out of a sense of obligation. By combining both of these ways of looking at community participation, I have identified some of the underlying structures and dynamics of volitional community participation.

Informal social connectedness is about the connections people have to friends, extended family, and neighbours. These are forms of participation that are private, and for the most part undertaken out of choice. *Civic engagement* refers to the ways in which people connect with the civic life of the community, for example, through religious observance, adult education, volunteering, and sporting and recreational clubs. These connections are somewhat more public than private, and tend to be activities undertaken out of choice. *Political participation* includes activities such as community activism and political protest that lie in the middle of the choice-obligation dimension, and that belong exclusively to the public end of the private-public dimension.

Consistent with the findings of Baum and her colleagues’ study in South Australia (Baum et al 2000), I have found that most people connect in a very limited range of ways, and to a limited extent, with their communities. Mostly, they maintain informal social connections, and occasionally some involvement in the civic life of the community. This latter is almost exclusively through joining in organised community activities for sport and recreation. Levels of other domains of civic engagement, such as volunteering, ongoing learning, and religious observance, are very low. With the exception of elite connectors, few if any people ever participate in the political life of the community. The widespread protests in Australia in 2002 against war in Iraq were thus an aberration from the norm.

Men and work-based obligations

Unexpectedly, a fourth broad kind of volitional community participation has emerged from the analysis of the super-domains of community participation and, despite it being a volitional activity, it is striking for the degree to which it is experienced as an obligation. It is *social contact with workmates*. Like civic engagement, social contact with workmates is located slightly to the public end of the private-public dimension of participation. But, unlike any other super-domain, it is located at the extreme obligation end of the choice-obligation dimension, far from informal social connectedness, its hypothesised home. This suggests that work-based social relationships are not like friendships and other informal social connections, and are not undertaken primarily for pleasure or intimacy. In addition, they are not related to other forms of community participation and thus do not help connect people to their local communities. They do not therefore have the same meaning or function in people's lives that informal social connections have, but instead are associated with fulfilling responsibilities. This is not consistent with Putnam's proposition that socialising with workmates is part of informal social connectedness, or "schmoozing". As Generation X men spend more time than any other type in social contact with workmates, perhaps this is one way in which younger men consolidate their place in the paid workforce and thus meet their obligations as breadwinners.

Women and household responsibilities

A second unexpected finding with respect to the super-domains of participation is that, far from being the cornerstone of informal social connectedness, contact with household members does not belong in any super-domain. It is not related to any other form of community participation, and nor does it have a super-domain of its own. Yet, except for people who live alone, participants in this study spend very large amounts of time with their household members, more than they do on any other domain of participation. Most people therefore spend a great deal of time pursuing a form of contact that does not connect them with others in their communities outside their household.

Like the domains of informal social connectedness, contact with household members is part of the private dimension of people's lives, extremely so. But, far from being an activity driven largely by choice, it marks the extreme end of the obligation dimension, more so even than socialising with workmates. Thus, in so much as contact with household members is related to

any other kind of participation, it is most similar to social contact with workmates. As the highest levels of contact with household members are found among working age women, perhaps it reflects the traditional role of women as those who undertake unpaid work in the home. As such, it may be to women what social contact with workmates is to men, that is, an aspect of fulfilling adult responsibilities and meeting role expectations.

ASSOCIATIONS BETWEEN PARTICIPATION, TRUST, AND DISTRESS

Differences in patterns of participation among women and men, and among the three generations, were reflected in the levels of trust and distress among participants in this study. Because I have conducted an analysis of the underlying structures and dynamics of community participation, I am able to show how participation is linked to psychological distress, and how these links vary between sex and generational groups, at least among the people of the Eurobodalla Shire. Firstly, as I predicted, distress was associated with volitional community participation. But it was not associated with all domains of participation. It was most strongly linked to the domains of participation that are part of informal social connectedness, and especially to contact with friends. This is interesting because friends are not only the core domain of informal social connectedness, they are the core of volitional community participation itself. Thus, contact with friends offers the dual benefit of being the key to community connectedness, and to low levels of distress.

Generally speaking, higher levels of participation are linked to lower levels of distress. That is, those who connect with their communities enjoy better mental health than those who do not. But this is not so for all forms of political participation, and it was the case that one domain of political participation were linked with higher, not lower, levels of distress. Distress was *not* linked to social contact with workmates (either for women or for men), and nor was it linked to volunteering, ongoing learning, or most forms of political participation. It was associated with contact with household members, but only for men, whose levels of distress were lower with higher levels of contact with household members (Spearman's $r_{distress (women)} = -.03, p > .05$; Spearman's $r_{distress (men)} = -.12, p < .01$). In sum, it is not strictly accurate to talk about a relationship between community participation and distress, or to say that participation is associated with distress. The relationship varies across different types of participation, and there are types of participation with which there is no relationship with distress at all.

Trust is also associated with participation, in much the same way as is distress. The highest levels of trust, like the lowest levels of distress, are found among those with the strongest informal social connections. Like distress, trust is not associated with all domains of community participation. Specifically, it is not linked to social contact with workmates, to any domain of political participation, or to contact with household members, except for men (Spearman's $r_{trust(women)} = .03, p > .05$; Spearman's $r_{trust(men)} = .10, p < .05$). Thus it is not valid to talk about a relationship between social trust and participation, but about relationships between trust and certain kinds of participation, and for relationships that hold for some groups but not for others.

Trust and distress are also linked to each other, and more trusting people report fewer symptoms of distress than their less trusting peers. Informal social connectedness, especially contact with friends, is particularly strongly associated with high levels of trust and low levels of distress. From the point of view of social capital, this means the relationship between trust and distress is about connecting with others in our private lives, because we want to. Importantly, these connections are to networks that exist *outside* the home and *outside* the workplace.

In terms of the dynamics of participation, trust, and distress, I have proposed that trust may mediate the relationship between participation and distress up to as much as 90-100%. That is, participating in the community may lead to higher levels of trust, and this may in turn lead to lower levels of distress. While it is not possible to use cross-sectional data to confirm a causal hypothesis, the findings do indicate that the hypothesis is plausible (Adlaf & Zdanowicz 1999), and do not undermine the argument that social capital may lead to lower levels of mental health problems. And, whatever the direction of the causal pathways, I have shown that the relationship between the two is not straightforward, but complex and interactive, and different for different people. Not all forms of participation are associated with distress, or trust, and the particular components, and the ways in which they are related, vary between women, men, generations, types of people, and life circumstances.

DIFFERENT PEOPLE, DIFFERENT LIVES

People differ systematically with respect to their patterns of participation, levels of trust, and experience of distress. Women tend to participate in the community more than do men, and they are also more trusting of other people. The same is true of older generations compared to younger ones. Members of the Long Civic Generation participate more, are more trusting than their Baby Boomer children, and less distressed. In turn, Baby Boomers are more trusting than Generation Xers, and, in the main, less distressed. All these findings are consistent with the hypotheses.

Gender and inter-generational differences are not only reflected in people's levels of participation, but also in their patterns of participation. That is, people appear to belong to certain groups based on their sex, their generation, and their patterns of participation. When examined like this, there are seven broad types of people among the respondents in this sample. These included six groups based on sex and generation, that is, a group of women and a group of men for each generation. There were no exceptions within this. The seventh group was comprised of elite connectors that included men and women, and people of all ages. These groups can be examined in terms of their socio-demographic features, which also differ systematically among them.

For example, the majority of Generation X women undertake full-time or part-time unpaid work in the home, where they spend their time with their children. They tend to invest in their informal social connections, and see more of their friends and extended families than do most people. Meanwhile almost all Generation X and Baby Boomer men are in full-time paid work, and their social lives are more centred on workmates. People of retirement age spend more time than younger people reading the paper and watching TV, keeping up with current affairs. Many such differences can be explained by people's circumstances and social roles, and the stage at which they are in their life course. This is interesting in its own right and also from the perspective of social change.

Social change and the shrinking community

If sex and life stage affect the level and nature of participation that people undertake, then men, and particularly women, are committed to many years of forms of contact with others that do

not connect them with their communities, do not contribute to the development of social trust, and are not associated with lower levels of mental health problems. This inwardly focused and restricted approach to community participation in an Australian community perhaps reflects generalised social changes that have occurred over the last century. In America, the modern economy has meant the displacement of families from their communities of origin and, due to working away from home (Skocpol, 1999), of parents from their children (Heying, 1997). This means less connected, more insular families (Heying, 1997). It also means more anxious and ever-moving parents (Heying, 1997), often too tired to participate in their (new) communities or do anything other than collapse in front of the television when their day's work is finally done (Skocpol, 1999).

As outlined in Chapter 1, net stocks of social capital in America have been steadily declining over the last century or more. Engagement in political life, and in organised community activity more generally, is plummeting (Putnam, 2000, p.64), particularly in the younger generations and among the less well educated (Putnam, 2000, p.62), and this is independent of factors such as social class or ethnicity (Putnam, 2000, p.46). In America, participation fell by 45% between 1985 and 1994 (Putnam, 2000, p.60), and similar trends have been observed in Australia. This is important for social capital. For though some types of participation, such as political participation, may not depend on being connected in a concrete sense to the local neighbourhood (Schudson, 1996), social capital in general does (Putnam, 1995; 2000). The findings of this study cannot confirm whether social capital is declining in the Eurobodalla Shire, but generational differences in the amount and variety of participation suggests this may be the case.

Evidence suggests that this decline in social capital can be attributed to a number of factors, in addition to the uprooting of families that has come with economic change. These factors include time and money pressures; suburbanisation, commuting, and sprawl; electronic entertainment, especially television³⁵; and generational change, including the "fading effects of World War II" (Putnam, 2000: pp.283-284). For Putnam, this is tragic, because social capital is a defining feature of a successful community (Fukuyama 2000), and its decline is inevitably bad news for individuals and communities alike. Despite this, there is no consensus that

³⁵ That television is in any way responsible for declining social capital is hotly contested Skocpol T. 1996. *Unravelling from Above. The American Prospect* 25: 20-5.

society would benefit from a return to the way things were in a previous era. Indeed Putnam has been criticised for wanting to take society back to the social capital heydays of the 1950s when, *Pleasantville*-style, women “ran church bakes” (Fukuyama, 2000). Some would say, persuasively, that there never was a golden age of social cohesion when we were “all at the same table” (Rich, 1999). Yet with such low levels of participation in local communities, falling levels of trust, and rising levels of mental health problems, something is clearly wrong. This begs a question about who will step forward in local communities and attempt to address these issues.

COMMUNITY ELITES

My analysis of types of respondents in this study, based on sex, generation, and patterns of participation, indicates that most but not all groups in the community are defined primarily according to their sex and life stage. But one group, the elite connectors, do not have patterns of participation that are primarily dependent on their sex or life stage, though they do tend to be male and middle aged. Elite connectors have quite different patterns of participation from all the other groups, and a distinctive socio-demographic profile. They participate in their communities, in almost every way, more than any other group, often much more. They are the only group to get involved in the political life of the community, they do most of the community’s volunteering, and they are well educated, vocal, and financially secure. With their dense connections to their communities, especially their involvement in its politics and the voluntary sector, and their privileged position in society, this is likely to be the group that influences how the Eurobodalla Shire is run.

Who are the elites?

The existence, nature, and role of elites in society are issues that have been given some attention in the literature on social capital. In America, at the height of their power in the early 1960s, members of local elites were remarkably homogenous (Heying, 1997), archetypal representatives of “stuffy, white, male bastions” (Rich, 1999). They were almost all men, of Anglo-Saxon origin, living in particular suburbs, trained as lawyers, engaged in the highest level of leadership, and owning or managing locally grown financial institutions or utilities. Being born locally was especially important. Indeed, being an outsider generally meant

exclusion from the elite no matter how influential one's position in local business. A minority group of wealthy, high status women from the non-business sector would typically constitute the rest of the local elite (Heying, 1997). This description of American elites in the 1960s is remarkably similar to Putnam's modern "machers", who typically invest in many types of civic engagement, own their own homes, and are mostly men, executive women, and people with higher levels of education in "late middle age" (Putnam, 2000, p.94). Both groups also sound much like the elite connectors of the Eurobodalla Shire. The role of elites in communities is therefore of general theoretical interest, and of specific interest for policy and program development in southern coastal New South Wales.

The impact of elites

In America, there is a long tradition of acquiring beneficiaries, leaders, and organisers of voluntary associations from among the educational and financial elites (Skocpol, 1999). To a large extent, the development of American social capital can be understood by examining patterns of civic engagement via elite leadership in local communities (Heying, 1997). I have shown empirically that civic engagement is closely connected to political participation, and elites are heavily involved in both. In the absence of the involvement of other groups within the community in these spheres, elites are immensely influential. There are two reasons for this.

Firstly, political participation is a defining factor in a community's development, and the political climate within which a community exists is the primary determinant of the level and characteristics of its social capital (Tarrow, 1996). America is famous for its social capital (Crowley & Skocpol 2001, Uslaner & Conley 2003), and Putnam has argued that it grew its social capital by "bottom-up" activism (1995). But this view is contested. Other commentators assert that social capital in America grew out of organised religious, professional, and business elites, and out of government, and participatory, egalitarian democracy itself (Skocpol 1996). That is, American social capital emanated from the very "institutional core" of the state (Skocpol, 1999).

Two areas of research outlined in Chapter 1 also tend to support a view that social capital is initiated from the top down. One area of research concerns evidence that social capital is an

ecological level mediator of the relationship between the wider social environment and individual and community outcomes. That is, factors in the wider environment (such as the political climate) influence the development of social capital, and social capital influences local outcomes. Only the elites interact with these “factors in the wider environment”. The other is evidence from early psychiatric epidemiology, in which we saw that the recovery of a local community was not initiated by community members themselves, but by local government officials, prompted by Leighton and his team (Leighton 1965). It was thus a group of elites that kick-started the community’s recovery.

Secondly, non-elite groups emulate elites. In America, to understand why social capital has declined, and maybe who is at least partly to blame, attention must turn to what the elites do (Skocpol, 1999). It is they who set the standards and whose example and life-style others follow. And it is they who, in their exercise of influence, are increasingly bypassing local organisations and going straight to Washington. Long hours in offices in cities miles from home, and out-of-hours networking with professional contacts (social contact with workmates), are more likely to satisfy the elites’ need to control money and information (Skocpol, 1999) than belonging to the local branch of the Lions Club. And so business leaders and power elites no longer live in their local neighbourhoods (Putnam, 2000, p.283). The loss of money, local high-level and influential networks, and leadership that has resulted from the disappearance of elites from their neighbourhoods has substantially reduced communities’ incentive for civic engagement, and ability to organise and act cohesively (Heying, 1997).

THEORETICAL IMPLICATIONS OF FINDINGS

It is clear that in trying to understand the complex mosaic of community participation and its relationship to distress, numerous factors have emerged that need to be taken into account. Each can lead to interesting and diverse avenues of scientific inquiry. It is therefore appropriate to sum up the main theoretical implications of this study.

Firstly, an examination of the structure of volitional community participation has revealed two important unexpected findings. These are that social contact with workmates formed a super-domain of participation of its own, and that contact with household members did not fit within any super-domain. These domains of community participation are closely connected to the

roles and life experiences of working age women and men. That a theory of the structure of volitional community participation does not account in expected ways for such focal forms of participation is of theoretical significance in its own right. It also impacts on an understanding of the differences between, and demands of, women's and men's roles in the community. In addition, while these two domains fell outside the hypothesis *structure* of participation, the findings of this study with respect to the *dynamics* of participation suggest that they belong in the area of life that is to do with the meeting of responsibilities, far from other forms of participation. This is an important contribution to clarifying the nature of community participation, its dynamics, and its meaning in people's lives.

Secondly, this research has contributed to an understanding of civic engagement and political participation, and of their connectedness one to the other through the domain of voluntary sector activity. The role of elites is of particular interest in this respect. The characteristics and behaviour patterns of elite connectors in the Eurobodalla Shire are consistent with a top-down theory of the development of social capital. Yet it necessarily inconsistent with the grass-roots theory. Perhaps the top-down and grass-roots approaches exist side by side, rather than in competition, and meet quite different goals. This would make sense, and would be consistent with the proposition that some kinds of connections are used for getting by, while others are for used getting ahead (Putnam, 2000, p.23).

Thirdly, this study has advanced an understanding of the relationship between social capital and mental health by showing that mental health, social trust, and distress are inter-related, and that this is primarily due to informal social connectedness. Putnam has been criticised for paying too much attention to the civic and political aspects of community participation, to the detriment of understanding the importance of informal social ties (Fukuyama, 2000). With respect to mental health, this criticism appears reasonable. But it might not be that simple. For while informal social connectedness is what matters to individuals, civic engagement and political participation are vital to healthy communities.

Yet not all forms of civic engagement and political participation were linked to mental health, and one was even negatively linked. And while civic and political involvement in the community might be of benefit to communities, they might be neutral, or even costly to the

individuals concerned (Putnam, 2000, p.20). In this, what is good for a community might be in conflict with what is in the best interests of individual citizens. While there is still far to go in addressing issues of cause and effect, any theory of social capital, particularly one that takes a normative approach, must take account of the balance of costs and benefits to the mental health of individuals of participating in the civic and political life of the community.

To elaborate this point, social capital may not be a public good. As the analysis of elite connectors has shown, the costs and benefits of community participation do not accrue evenly to all community members. In addition, social capital does not always deliver public benefits, or deliver benefits equally to all community members (Foley & Edwards, 1998). For example, in some circumstances social capital promotes economic growth, while in others it discourages growth (Woolcock 1998). In terms of mental health, high levels of social capital are sometimes associated with positive outcomes, sometimes negative. For example, in a study conducted in Baltimore examining the behaviour and mental health of pre-school African-American children, high levels of social capital were only found to be beneficial in non-deprived neighbourhoods (Caughy et al 2003). That is, it is possible that in some neighbourhoods, it is not always advisable to mix with the neighbours, because it matters who people mix with (Uslaner & Conley 2003). Worse, social capital has a “dark side” (Putnam 2000: pp.21-22, Schulman & Anderson 1999), and this can involve not only inadvertent harm to vulnerable groups within the community, but also sometimes their active rejection (Butterworth & Berry, in press).

Finally, the findings of this study have implications for theories of society. The Eurobodalla Shire is a small, poor, and poorly serviced rural region in southern New South Wales. In terms of influence, it is not Sydney or Canberra. It certainly is not Washington or Beijing. Yet it contains a distinctive group of elite connectors, very similar to American elites of the 1960s, and to the “machers” of contemporary America. It seems, therefore, that elites may exist in every community, and that the dynamics of elite influence operate everywhere, and in much the same way. Elite influence must therefore be a fundamental element of how communities function, maybe even the engine that drives social capital. It is thus of theoretical importance to an understanding of how communities operate and what helps them fail or succeed.

LIMITATIONS OF THE STUDY

The theoretical implications of research findings inevitably lead to the formulation of new research questions, and then to new research. It is therefore essential to consider the limitations of the present research in order to learn from mistakes, and to inform and improve the design of future research. The principle limitations of this study relate to sampling and design, and I will address these in turn.

A key finding of this research was that people could be grouped according to their patterns of participation. This not only generated a seven-type taxonomy of community participators, but numerous additional research questions. However, with between 84 and 182 respondents in each of the seven types of participators, the size of the sample was in some cases too small to explore differences between types in levels of trust and distress. In particular, it was too small to explore differences *within* types in terms of socio-demographic factors, patterns of participation, and their relationships to trust and distress. Knowing that types of participators exist within communities, and that they have different and interesting experiences of community, it would be advisable to collect data from larger samples in future research of this kind.

Further, the very low response rate among the youngest men in the sample means that the findings for this sample may not generalise to other young men, though they were consistent with the hypotheses, and also with findings for other age-groups. It is also possible that what I have found in this coastal rural location may not be found in other rural locations, or that rural experiences may not generalise to metropolitan areas. It would be important to examine patterns of participation in cities, as well as within other rural locations, because towns have more social capital than cities (Putnam, 2000, p.138). For Putnam, urban communities are “mosaic[s] of loosely coupled communities”, compared with the “single, tightly integrated communit[ies]” found in rural areas (2000, p.96). If this is so, significant differences in participation, trust, and mental health could be expected.

There were a number of design issues. One is that, due to space limitations in the questionnaire, it was not possible to collect detailed socio-demographic data. This would be an important addition to future studies, particularly given the findings about elites, and the need to

identify socially excluded groups, who are excluded from all forms of participation (Baum et al 2000, Butterworth & Berry 2004). Another design limitation is that physical health was not assessed. The point has been made that physical and mental health are closely connected (Herrman 2001), and the results of this study would have been more elucidating had I been able to account for the effects of physical health. This would have been of particular value in understanding the experiences of older people. In addition, in a study focusing on individual outcomes, a measure personality should be included in future longitudinal studies. While a longitudinal design would not enable conclusions to be drawn about developmental compared with cohort effects, it would contribute to the debate about causality in that it would add to an understanding of why people participate, and fail to participate, in their communities, and how this might be linked to their mental health.

There are well-recognised limitations associated with cross-sectional designs, particularly with respect to untangling cause and effect, as mentioned above. However, they have their place, and are essential precursors to more expensive and difficult longitudinal research. Two final design issues are (i) that this study has relied on a single informant perspective, and has not used multiple sources to “triangulate” findings (Putnam 2000: p.26), and (ii) that the *K10* measure of general psychological distress does not distinguish between the onset and course of distress.

FUTURE RESEARCH

The theoretical implications and the limitations of this research suggest some directions for further research. The first point to make about future research in the field of social capital and mental health is that the methodological limitations of current approaches to research into social capital need to be systematically addressed. A heavy over-reliance on data dredging of social surveys needs to be replaced by multiple approaches to research, including those that combine qualitative and quantitative strategies, in studies purpose-designed to address specific questions and testable hypotheses. In particular, experimental designs would be of great benefit in untangling cause and effect relationships among factors, and these could be usefully supported by general population prospective studies and various other longitudinal designs. Further cross-sectional research is needed to identify more of the components of social capital, and how they are related. Developmental and cohort factors can best be addressed by

longitudinal studies. And qualitative research could play a useful role in its own right in exploring the nature of different groups within the community. It could also inform the design of valid instruments, ideally instruments that can be adapted for use with different populations, upon which sound research is heavily reliant, and that are so sadly lacking in this field.

Beyond following through on methodological issues, certain research questions flow from the findings of this study. For example, as outlined in Chapter 1, social cohesion involves more than social trust, and further research is required to identify and test its components empirically, and to show how they relate to each other and to participation. It would also be valuable to investigate relationships between community participation, social trust, and other mental health problems. The purpose of this would be to discover whether there is a general relationship between social capital, validly and systematically measured, and mental health, or whether particular components of social capital or community participation are linked to specific mental health problems. It is also clear from this study that community participation does not mean the same thing to all people. Further research is needed to learn more about these differences, particularly with respect to major grouping variables such as sex, generation, ethnicity, and socio-economic status.

At a broader level, work is needed to identify possible causal pathways linking the wider social environment to community level mediators such as social capital, and linking such mediators to individual mental health experiences. This would involve learning more about leadership, elites, and political influence, and particularly about how struggling communities reinvigorate themselves. It would also involve learning more, in terms of the social context, about how people develop mental health problems, and whether this becomes a barrier to general participation in the community, as it does to economic participation. It would be valuable to distinguish between factors in the social environment that influence the onset of mental health problems and those that affect their course.

Finally, a number of factors are separately related to community participation and to mental health, and future research effort could be well expended learning more about these factors and about how (and if) they remain related when they are considered together. These factors include ways in which opportunities to participate are structured in terms of issues such as

power, how different family structures impact on participation, and also the role of deprivation in shaping people's connections to the community. Longitudinal research would be particularly relevant to investigating these topics, with issues to do with the intergenerational transfer of disadvantage being a key research need.

PUBLIC POLICY AND PROGRAM DEVELOPMENT

The findings of this study also have implications for public policy and program development. These implications are perhaps best illustrated by an example. The example relates to an Australian Government policy in which certain unemployed persons can be required to perform voluntary work in exchange for income support. The implication of the findings of this thesis, in this case, are that the policy does not (but possibly should) take into account the relationship between mental health, volunteering and economic participation.

Among the rationales for this policy is a view that voluntary work is likely to promote workforce readiness and work-like habits and attitudes, thus enhancing the prospects of successful entry into the workforce. This rationale is based partly on contemporary views about social capital and its benefits, which is widely promulgated as a public good *that leads to* desirable outcomes, including success in finding employment (eg., Stone et al., 2003). A central component of social capital is volitional community participation. In Australia (Vromen, 2003), as in other countries (Putnam, 1995), a key part of community participation is volunteering. Caught up in the general discourse about social capital, volunteering is also promoted as a public good, with high levels of volunteering considered an indicator of a "healthy", social-capital-rich community. The implication of this is that volunteering is good for people, including for their employment prospects.

Social capital, and by inference volunteering, are also considered to be good for people's mental health. The volunteering policy could thus be expected to be associated with reduced psychiatric morbidity within the income support population. It would be reasonable to consider this a desirable, if unintended, consequence of the policy, particularly given there is a relationship between employment and mental health.

Substantial empirical evidence indicates that mental health problems are a significant barrier to employment, and also that income support recipients experience greatly elevated levels of mental health problems (for a review, see Butterworth & Berry, 2004). Further, losing paid employment can trigger the onset of mental health problems, which then exacerbate difficulties re-entering and retaining paid employment. Reducing psychiatric morbidity within the income support population would therefore be a sensible goal in terms of promoting workforce participation.

But the volunteering policy might result in quite the opposite outcome because of certain relationships between volunteering, income support receipt and mental health. I have stated that social capital, and by inference volunteering, are associated with lower levels of mental health problems. As general psychological distress is an overall indicator of mental health problems, higher levels of volunteering would be expected to be empirically associated with fewer symptoms of distress. However, in this sample, there was in fact no link between volunteering and general psychological distress, *with one exception*. Among young people, volunteering and mental health were linked. But contrary to the social capital/public good hypothesis, young people involved in volunteering reported *worse* mental health than those who did not volunteer. In sum, not only was volunteering not associated with lower levels of mental health problems in this sample, but for young people it was associated with higher morbidity.

With volunteering related to elevated distress among young people, and with income support receipt related to elevated psychiatric morbidity in all age groups, making young income support recipients volunteer may not be a wise employment policy. This is because, in a group that already has elevated morbidity, volunteering could be implicated in the onset or worsening of mental health problems. As mental health problems are a barrier to securing and retaining paid employment, from a policy perspective, making unemployed young people volunteer in exchange for income support could lead to a significant policy failure. Such a failure might be foreseen were the relationship between volunteering, mental health, employment, and income support receipt among young people considered.

The findings presented in this thesis have shown that informal social connections have a particularly strong relationship with lower levels of psychological distress. The findings also show that not all types of participation are related to distress, and voluntary sector activity is one such example. As mental health problems are such a significant barrier to employment, it may be more strategic to encourage people to build supportive informal social networks than to participate in the voluntary sector. On the other hand, voluntary sector activity is somewhat similar to social contact with workmates in that, though it is located towards the choice end of the choice-obligation dimension of participation, it is more public than private. The two approaches could be easily and inexpensively compared to one another and the results could lead to more valid and evidence-based policy development. It could also lead to new approaches. For example, perhaps voluntary work and informal social connectedness would work in combination to overcome mental health barriers to employment better than either does alone.

The findings of this study also have implications for fields such as community capacity-building and mental health promotion. For example, in investigating the use of social capital as a capacity-building strategy, it is essential to understand the role of community leaders and elites, and how power is shared within a community. That business leaders and power elites no longer live in their neighbourhoods of origin (Putnam, 2000, p.283) is an issue that may need to be addressed. In terms of mental health promotion, social capital can assist in spreading information relatively quickly and efficiently within communities (Sartorius 2003). This is because communities rich in social capital typically feature extensive social networks. In addition, high levels of social capital are associated with conformity to norms and with pro-social behaviour, such that members of cohesive communities will tend to respond positively themselves, and encourage others to respond positively, to health promoting activities (Butterworth & Berry 2004). However, social capital is not evenly distributed in communities (Stone et al 2003), and those most in need are those most likely to miss out (Butterworth & Berry 2004).

CONCLUSION

Despite the limitations of this research, and the need for these findings to be replicated and extended in other samples, this study adds to knowledge about the “underlying structures and dynamics” (Leighton 1994) of community participation, and to its relationship with trust and distress. As such, it makes a contribution to “untangling the spaghetti” (Putnam 2000: p.137) of social capital, and to helping explain the nature of the connections between its components (Gaudiani, 1996, in Rich, 1999). This includes contributing to the unpacking of factors that mediate and moderate social capital (McKenzie et al., 2002), such as sex, generation, socio-economic status, and ethnicity. In particular, the study has shown that community participation is not a unitary phenomenon, but a multifaceted concept, the facets of which are related in a number of different ways, and which are also directly and indirectly related to psychological distress.

In purpose-designing a study to address specific research questions, and in using a variety of appropriate and innovative analytic techniques, it has been possible to make substantial methodological headway in research into social capital and mental health. In particular, I have shown the power of profiling as a method for examining how multifaceted phenomena find expression in the lives of individuals. I have also shown that psychological distress is strongly related to community participation, and contributed some information about those relationships.

The predominantly individualistic approach common in modern Australian psychiatric epidemiology is, I believe, a weakness of the paradigm. Mental health research could benefit immensely from including ideas from disciplines that examine the impact of the social environment on mental health outcomes, especially social capital theory. Equally, the methods of investigation used in social capital research are seriously inadequate, and social capital could benefit just as much from employing scientific methods of inquiry as psychiatric epidemiology could from borrowing ideas from social capital. Each field has its strengths but, in terms of mental health research, is inadequate on its own. Yet together, psychiatric epidemiology and social capital can be immensely powerful, and can make substantial contributions to the understanding of mental health in contemporary Australian communities.

**APPENDIX 1.1: ADDRESSING MENTAL HEALTH
PROBLEMS AS A STRATEGY TO PROMOTE EMPLOYMENT:
AN OVERVIEW OF INTERVENTIONS AND APPROACHES**

(Butterworth & Berry, 2004)

Addressing mental health problems as a strategy to promote employment: an overview of interventions and approaches

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1. Introduction

There is growing recognition in the Australian community of the widespread prevalence and consequences of mental illness. Poor mental health can have a devastating impact on the lives of individuals, resulting in loss of quality of life, as well as having adverse effects on family functioning, parenting effectiveness and child development. There is also growing recognition of the economic consequences of mental illness.

This paper outlines why it is particularly important to consider mental health in the current social policy context, and provides evidence of the extent to which mental health problems are a barrier to greater levels of social and economic participation. The main aim of this paper, however, is to review and examine the effectiveness of interventions that take account of, and seek to address, common mental health problems as a strategy to promote employment. That is, investigating whether interventions that address anxiety and depression are effective in promoting employment amongst income support recipients. We outline a framework to classify different types of interventions and briefly describe interventions that are relevant to the Australian social policy context.

Mental health problems

There are many types of mental health problems, each with different characteristics and effects. Our focus is on the high prevalence, common mental health problems such as anxiety and depression. Goldberg and Gournay (1997) categorised disorders on the basis of characteristics such as prevalence, associated disability, response to treatment and likelihood of spontaneous remission. They identified the common mental health problems as a discrete category with these features—they are treatable; they are likely to result in disability; and they do not usually receive specialist treatment. Given this combination of features, we consider that there may be important economic and social gains from considering common mental health problems in the design and delivery of social welfare programs.

Anxiety and depression are widespread in the Australian community. Analysis of the National Survey of Mental Health and Wellbeing found that around 10 per cent of working-age Australians had an anxiety disorder and 8 per cent a depressive disorder in the previous 12 months (Butterworth 2003a). Anxiety disorders include social phobia, agoraphobia, panic disorder, generalised anxiety disorder, obsessive-compulsive disorder and post-traumatic stress disorder. Affective or depressive disorders include major depressive episode, dysthymia, mania, hypomania and bipolar affective disorder. The interventions and approaches we outline are also applicable to people who experience sub-clinical levels of mental health problems or psychological distress (that is, symptoms that are debilitating but do not reach the criteria for recognition as a clinical disorder).

Mental health problems and disability

The common mental health problems are sometimes considered less severe than the low prevalence 'major' mental disorders such as schizophrenia. However, the consequences of common mental health problems can be just as severe and disabling. Up to 20 per cent of adult Australians experience a mental disorder within a 12-month period (Andrews, Hall, Teesson & Henderson 1999) and mental illness is the leading cause of non-fatal disease burden in Australia (Mathers, Vos & Stevenson 1999). That is, mental illness is responsible for the greatest level of disability or impairment in the Australian community—over twice that associated with either cardiovascular or musculoskeletal disorders. The profile of mental illness in the community is distinct from that of other disabling conditions. Whereas the prevalence of most forms of disability increase with age, mental disorders are most prevalent in young adulthood, and less prevalent with increasing age (Henderson, Andrews & Hall 2000). Thus, the onset and impact of these disorders co-occurs with significant life stages such as the transition from adolescence to adulthood (with potentially long-term effects on educational attainment and early labour force experiences), family formation, child rearing, and career development.

Having a common mental disorder such as anxiety or depression can, therefore, impact on a person's participation in work. For those people currently in employment, the cost of depression through absenteeism and loss of productivity is estimated to be \$3.5 billion per year (www.worcproject.com.au). Appropriate interventions and assistance can reduce this burden. Studies show that evidence-based treatment for people with depression can lead to better employment outcomes (for example, Smith, Rost, Nutting, Libby, Elliott & Pyne 2002). It may also be cost effective to provide treatment for employees with depression, with the costs of treatment considered to be less than the gains achieved through increased productivity (see Wang, Simon & Kessler 2003). The Work Outcomes Research and Cost-Benefit (WORC) Project, conducted by the University of Queensland in collaboration with Harvard University, is an Australian project examining the benefits of employers screening and treating depression in the workplace. The goal of treating previously undiagnosed depression is to

improve employee wellbeing, and reduce the cost to employers of absenteeism, staff turnover, and decreased productivity. The WORC Project is seeking to recruit employers to quantify the costs and benefits of screening and treating depression.

Similar to such interventions focusing on people currently in the workforce, improving the recognition and assistance provided for income support recipients with depression or anxiety disorders could maximise employment outcomes and increase economic and social participation. We argue that addressing mental health problems is particularly critical in the current social policy context where there are growing concerns about welfare dependency, the effects of structural ageing on the population, and the policy priority to maximise participation and productivity amongst people of working-age (for example, Commonwealth of Australia 2002; Department of Family and Community Services 2002).

Income support receipt and mental health

Extensive psychological research has shown that unemployment adversely affects mental health (for example, review by Dooley, Fielding & Levi 1996; recent papers by Dooley, 2003; Fryer & Fagen, 2003; review of longitudinal studies by Murphy & Athanassou 1999). This is recognised in economic and social policy literature (for example, Flatau, Galea & Ray 2000), including in a recent review in this journal (Ganley 2003). From a practical perspective, Croft (2002) reported that the prevalence of mental health problems among people who are unemployed has significant policy and service delivery implications for the assessment processes and programs delivered by Centrelink, Job Network members and other service delivery organisations. These are, however, complex issues and it must also be recognised that, for some people, poor mental health may be the primary reason for their unemployment and that in some circumstances employment itself may have adverse effects on mental health (see Ganley 2003).

We are not only concerned with unemployment but also other categories of welfare recipients. There is considerable evidence of the poor mental health of lone parents (for example, Hope, Power & Rodgers 1999). Ganley (2003) reviewed research on the mental health of women looking after children at home. Butterworth (2003a; 2003b) reported analysis of the Australian Bureau of Statistics National Survey of Mental Health and Wellbeing to estimate the prevalence of common mental disorders among Australian welfare recipients. He found that, whereas around 19 per cent of working-age Australians not reliant on welfare payments had experienced a common mental disorder (including anxiety, affective and substance-use disorders) in the previous 12 months, the corresponding figure for income support recipients was 31 per cent. Those identified as unemployed (34 per cent) and lone mothers (45 per cent) had particularly elevated levels of disorders.

While alarming, the increased prevalence of mental health problems among welfare recipients is not unexpected. Established risk factors for poor mental health include unemployment, poverty, low socio-economic status, and sole

parenthood (Dohrenwend, Levav, Shrout, Schwartz, et al. 1992; Hope et al. 1999; Kessler, House & Turner 1987; Sturm & Gresenz 2002). Clearly, many of these factors overlap with welfare receipt.

International welfare research has examined the prevalence of common mental health problems among welfare recipients, demonstrating results consistent with the Australian research. American welfare recipients demonstrate significantly poorer mental health than non-recipients, with estimates that between 35 and 60 per cent of recipients experience a clinical disorder or substantial symptoms (Coiro 2001; Danziger, Corcoran, Danziger, Heflin et al. 2000; Derr, Hill & Pavetti 2000; Kalil, Born, Kunz & Caudill 2001; Kalil, Schweingruber & Seefeldt 2001; Lennon, Blome & English 2001). The findings are not restricted to English-speaking countries, with the prevalence of mental disorders among recipients of a French income support payment more than five times the rate in the general Parisian population (Kovess, Gysens, Poinsard, Chanoit & Labarte 1999).

In summary, many welfare recipients experience poor mental health. Mental health problems are a major cause of disability and are therefore likely to make (re)employment difficult. Much research shows that mental health problems decrease the likelihood of later employment (Danziger et al. 2000; Kessler & Frank 1997; Lennon et al. 2001). Derr et al. (2000) discuss several ways in which depression can affect a person's ability to work. These include a direct adverse effect on work behaviour, the episodic or irregular nature of the disorder limiting employment options; the side-effects of medication; the likelihood of limited work history or educational achievement; and the stigma associated with mental illness (which prevents treatment seeking and also creates employer reluctance to hire). There is also evidence from intervention research demonstrating that efforts to address mental health problems amongst the unemployed can facilitate the transition into work.

Interventions to address mental health

Interventions to address mental health problems may, therefore, be an effective approach to promote employment. Australian Government agencies already deliver services with an employment or participation focus to people with mental health problems (for example, the Personal Support Programme, disability employment assistance, vocational rehabilitation, the role of specialist Centrelink officers such as psychologists and social workers, and other programs for people who are homeless or at-risk youth). However, these services are generally targeted to those with low prevalence disorders, focus more on Disability Support Pension recipients than those in receipt of other forms of welfare payment, and do not have the coverage to assist very large numbers of clients. Thus, it remains untested whether assisting those with common mental health problems in the broader welfare population would have a positive effect on wellbeing and participation outcomes.

The United States Surgeon-General's report (Department of Health and Human Services 1999) identifies two main categories of interventions—psychosocial and pharmacological. A variety of different forms of psychotherapy exist, with interventions able to be delivered individually, or to couples, families and other groups. Group interventions have the benefit of being more cost efficient. Other relevant approaches (see the World Health Report 2001) include psychosocial rehabilitation (improving individual competencies and skills, with a focus on client empowerment and reduction in stigma and discrimination) and vocational rehabilitation.

Other interventions may also have a positive impact on mental health. For example, Jorm, Christensen, Griffiths and Rodgers (2002) identify a range of lifestyle and complementary treatments for depression with proven scientific efficacy. Effective treatments include St John's wort, physical exercise, acupuncture, massage and yoga.

The World Health Organization report *Mental health: new understanding, new hope* (WHO 2001) notes that mental health is influenced by a combination of (and interaction between) biological, psychological and social factors. The magnitude of mental health problems and their multifactorial aetiology necessitate a public health response—that is, responding to mental health needs at the population level. This includes strategies to address lifestyle and risk factors, promote stable family environments, increase social cohesion, and support positive development across the life course. Such an approach emphasises the importance of creating intersectoral links, including considering social policy issues such as housing, income support, employment, disability services, macro- and micro-economic policies, education, and criminal justice issues.

Categorising interventions for welfare recipients

As is clear even from this brief overview, there are many different responses to mental health issues. There are equally many ways to categorise these interventions. For example, the *National Action Plan for Promotion, Prevention and Early Intervention for Mental Health* (Commonwealth Department of Health and Aged Care 2000) defined a spectrum of mental health interventions reflecting prevention, treatment and continuing care.

We have adopted the typology described by Dooley and Catalano (2000), which is based on two dimensions—the timing and the level of the intervention. The timing dimension has four stages. The first, proactive primary prevention, involves steps to prevent exposure to the risk factor. The second stage, reactive primary prevention, is analogous to inoculation. It involves strategies that attempt to increase people's ability to cope with risk factors. The third stage is secondary prevention. This includes interventions that target early symptoms with the aim of preventing further progression of the disorder. Finally, the tertiary prevention stage consists of efforts to manage the disorder.

The second dimension is the level at which the intervention is targeted. Dooley and Catalano (2000) note the importance of considering the broader social structures and physical environment around the individual. There is a continuum along which interventions lie, from those that specifically target the individual through to those that target families, communities, organisations or nations. For simplicity, they dichotomise this to micro-level interventions that target the individual or family; and macro-level interventions targeting higher-order levels, though it is important to recognise that there are not strict boundaries about these levels.

Table 1, adapted from Dooley and Catalano (2000), presents the matrix of eight intervention categories created by the combination of these two dimensions. The intervention typology provides a context in which to consider interventions, encouraging a holistic approach to service delivery and policy development. We consider this table is very useful for the current analysis. It also provides a framework by which we can analyse interventions. This promotes assessment of the purpose and aims of interventions, and how they could fit within a social welfare or employment context. This helps us to evaluate and determine the appropriateness of proposed mental health interventions and approaches in the social policy context. Not all of the categories in the model are directly relevant to the social policy context, but for the sake of completeness, we will present information on the types of interventions under all headings. Further, all categories of interventions need to be considered to ensure a holistic approach to addressing the mental health needs of the Australian community, including income support recipients.

In the remainder of this paper, we will describe the activities and interventions that fit within each table cell. We start by considering the cells that describe interventions at the macro-level—that is, interventions targeted at the community or population.

Table 1 Typology of interventions and examples (adapted from Dooley & Catalano, 2000)

Stage (Timing and purpose of intervention)	Intervention level (where program is targeted)	
	Micro Individual or family	Macro Broader
1. Proactive primary prevention Preventing welfare reliance/ unemployment	Avoidance Education, training Early intervention (childhood and family)	Environmental Economic and workplace policies
2. Reactive primary prevention Preventing mental health symptoms that arise from welfare receipt	Ecological coping Coping skills and abilities Job-search skills Social skills and networks	Ecological enabling Social services—social welfare, health care, employment services Social capital
3. Secondary prevention Early intervention for those demonstrating early symptoms	Early detection/treatment Crisis intervention & support Counselling	Population health promotion Mental health promotion Mental health literacy Screening
4. Tertiary prevention Managing the disease	Medical care Medical and professional assistance Workplace support	Medical enabling Arrangements to support individual care—self-help groups, community attitudes about mental health and welfare receipt

2. Macro-level interventions

Proactive primary prevention—the environmental level

The first stage of macro-level interventions, proactive primary prevention, is characterised by activities such as setting economic, health and workforce policy and related areas of social policy. These issues are relevant to any consideration of mental health because health outcomes are heavily influenced by the socio-economic environment (Hawe & Shiell 2000). For example, absolute levels of individual income and relative deprivation (Marmot 2001) play a significant role in influencing outcomes (Baum 2000; Lynch, Due, Muntaner & Smith 2000; Wilkinson 2000).

Reactive primary prevention—ecological enabling

The second stage of macro-level interventions, reactive primary prevention, includes providing social services such as social welfare, health care and employment services, and activities aimed at strengthening communities, especially communities in need. It includes mental illness prevention activities, which are designed to remove risks and barriers to wellness (Waring, Hazell, Hazell & Adams 2000). Three areas of research are particularly relevant—social exclusion, social capital (McKenzie, Whitley & Weich 2002), and mental health promotion.

Social exclusion refers to a cluster of socio-demographic factors, such as poverty and deprivation, together with the associated inability of people experiencing such factors to access the full range of community resources that would otherwise be available. Dewilde (2003) has defined it in terms of the 'political economy' of the life course and, thus, as a dynamic, life-long process. Certain ecological level factors promote the likelihood of people experiencing social exclusion, such as living in remote locations (Alston, 2002) or belonging to an ethnic minority (Boydell, van Os, McKenzie, Allardyce et al. 2001). Like those living in poverty, people with mental health problems also find themselves over-represented in all areas of social exclusion (Baum 2000; Bonner, Barr & Hoskins 2002).

In Australia, the effects of exclusion are apparent in economic terms and across all forms of social participation, including contact with family and friends (Baum 2000). This is especially challenging for income support recipients with mental health problems for two reasons—because those living in deprived areas have elevated mental health service needs (Abas, Vanderpyl, Robinson & Crampton 2003; Alston 2002), together with the least access to services (Herrman 2001); and because contact with friends can reduce the risk of developing mental health problems and assist recovery (Prince, Harwood, Thomas & Mann 1998). Thus, social exclusion, mental health and income support receipt reinforce each other; the very individuals who most need access to the benefits of participation are the least likely to achieve access.

A substantial body of research details the beneficial effects on health and employment of living in communities that are rich in social capital. While this research is fraught with theoretical and methodological difficulties, and there is vigorous debate about the concept (Hawe & Shiell 2000; Henderson & Whiteford 2003; Lynch et al. 2000; Whitehead & Diderichsen 2001), there is broad consensus that social capital includes two core concepts (Putnam 2000, p21). One has to do with **participating** in the community, the networks of association that participating generates, and the quality of relationships within and between those networks. The other is the **social cohesion** that results from participating in the community—that is, the extent to which community networks bring people together and the nature of the resulting group behaviour. Social cohesion is evident in community-level phenomena such as social trust (trust in strangers), generalised reciprocity ('the kindness of strangers'), cooperation, organisation, information sharing and other pro-social norms (for example, Portes 1998).

High levels of social capital are associated with physical health benefits and lower mortality (Kawachi, Kennedy, Lochner & Prothrow-Stith 1997; Skrabski, Kopp & Kawachi 2003) and mental health benefits (McKenzie et al. 2002; Sartorius 2003). The link between mental health and some elements of social cohesion are of particular interest because they relate to community-level wellbeing and also directly to individual outcomes. For example, in Australia, those who report higher levels of social trust also report fewer symptoms of psychological distress (Berry & Rickwood 2000). Falling levels of social trust over three generations of Australians have been linked to rising levels of psychological distress (Berry & Rodgers 2003).

Access to social capital assists in finding employment (Aguilera 2002; Caulkins & Peters 2002), including self-employment (Abell 1996). A recent Australian study of the relationship between social capital, employment status (in full-time paid work, part-time paid work, or not in paid work) and job search strategy (Stone, Matthew & Hughes 2003) conceptualised social capital using two approaches. The first was a sociological approach, in which social capital was defined as a series of key concepts, such as networks, trust and reciprocity. The second, more psychological approach, classified participants into 'social capital types', including the 'social capital poor'. Networks of association and the cohesion they produce (that is, social capital) were unevenly distributed in society, with those in most need having fewest resources.

Some concepts, such as social trust and breadth of institutional ties, were important in finding and being in paid employment, and the 'social capital poor' were the most disadvantaged both in terms of being in paid employment and also in terms of job search strategy.

Different types and levels of social capital operate in indirect and, sometimes, counter-intuitive ways. Social capital does not always deliver public benefits, or deliver benefits equally to all community members (Foley & Edwards 1998). In some circumstances, social capital promotes economic growth, while in others it discourages growth (Woolcock 1998). Equally, high levels of social capital are sometimes associated with positive outcomes in mental health, sometimes negative (Caughy, O'Campo & Muntaner 2003). In sum, social capital, like social exclusion, is not shared evenly or randomly among all members of a community, and deficits in social capital are focused on the vulnerable. Some people's lives can be marked by compounding problems (Robertson & Donnermeyer 1997) both in terms of social exclusion and access to social capital.

Ecological enabling can thus be an effective mechanism for limiting the likely impact of environmental risk factors, both for mental health problems in general and for the interaction between mental health problems and the requirement for income support in particular. However, such mechanisms are not always available or effective. When people have been exposed to mental health risk factors, it becomes necessary to take action to reduce the impact of these factors and to minimise the likelihood of further harm. At this point, secondary prevention becomes necessary, which is the third stage in the model. With respect to the macro-level of analysis, this involves population health promotion.

Secondary prevention—population health promotion

Population health promotion focuses on improving health outcomes by changing behaviour, reducing risks and enhancing protective factors. Mental health promotion is an umbrella term (Herrman 2001) that includes such activities as public education and awareness raising campaigns; preventive screening (Hickie, Davenport & Ricci 2002; Mechanic 1999; Scott, Thorne & Horn 2002); awareness raising among health professionals (Harris, Harris, Lee & Powell Davies 1999); community capacity building and other community-level interventions.

The growing recognition of the need for mental health promotion belies a historical lack of recognition, due in part to considerable confusion about what mental illness is (Herrman 2001). This confusion arises partly because mental health has been considered less important than physical health (Hickie 2002; Thornton & Tuck 2000). A further complication for mental health promotion is that, like social exclusion and social capital, mental health problems are unevenly distributed in terms of socio-demographic factors, life events and personal characteristics (Braidwood 2000; Herrman 2001).

Mental health promotion must address the factors that may influence the course of mental health (Herrman 2001). These include making sure communities themselves are health promoting (Baum & Palmer 2002; Herrman 2001) and that people experiencing special mental health needs have 'somewhere to live, something to do [and] someone to love' (Bonner et al. 2002); ensuring people have the general skills required to participate in the life of the community; and ensuring people have the specific skills of mental health—resilience and the ability to '... think and learn, ... and live with their own emotions and the reactions of others' (Herrman 2001). The most important of these categories is the first (Herrman 2001)—that is, building healthy and health-promoting communities (Hawe, King, Noort, Jordens et al. 2000; Robinson & Pennebaker 2002).

Two further issues emerge in mental health promotion (Reppucci, Woolard & Fried 1999). One is less emphasis on ad hoc, simple, one-off interventions, and more on larger, multi-dimensional, multi-level approaches based on theory. The other issue emerging in mental health promotion is greater accommodation of diversity, particularly among those who belong to multiple socially excluded groups. In attempting to take account of diversity, it is worth acknowledging that neither income support recipients (Butterworth 2003b) nor people with mental health problems (Song & Singer 2001) form one homogenous group. It is interesting to note, therefore, that there are empirical approaches to profiling that are effective with welfare (Yoshikawa & Seidman 2001) and mental health issues (Rubin & Panzano 2002). Thus, it would be possible to conduct sound statistical analyses of people in receipt of income support, or experiencing common mental health problems, or both, to come to a more sophisticated understanding of the types of people that are in these categories, and what their needs are.

With respect to addressing diversity, a range of delivery strategies is necessary (Braidwood 2000; Hawe 2000; Reppucci et al. 1999), including taking interventions into multiple settings (Licata, Gillham & Campbell 2002; Secker & Membrey 2003), particularly community health care settings (Baum, Kalucy, Lawless, Barton et al. 1998).

Interventions seem to work best when several approaches are used in concert (Taylor, Lam, Roppel & Barter 1984) and successful interventions typically employ top-down and bottom-up activities (Skutle, Iversen & Bergan 2002). A range of information (Rogers 2002) and service delivery mechanisms are also required, such as innovation and experimentation in the use of technology (Farrell & McKinnon

2003; Mechanic 1999; Starling, Rosina, Nunn & Dossetor 2003); telephone counselling and crisis interventions; and the use of entertainment and information media (Anderson 2003; Taylor et al. 1984). In addition, researchers have noted the imperative for people with special mental health needs to have a say in mental health promotion activities (Herrman 2001; Hickie 2002), including negotiating service level and provision arrangements (Crane-Ross, Roth & Lauber 2000).

Tertiary prevention—medical enabling

The final stage of macro intervention involves activities that ensure that organisational arrangements are in place to support the provision of individual care. These could include putting in place systems and mechanisms to support self-help groups, providing organisational mechanisms for changing community attitudes about mental health and welfare receipt, or ensuring appropriate programs are in place to address the mental health needs of income support recipients.

3. Interventions and approaches at the micro-level

Despite evidence of the high prevalence of mental health problems among income support recipients and the extent to which this acts as a barrier to participation, there are very few interventions that specifically target people's mental health needs as a strategy to facilitate employment (Creed, Machin & Hicks 1999; Harris, Lum, Rose, Morrow et al. 2002; Proudfoot, Gray, Carson, Guest et al. 1999). In a review of over 50 European examples of good practice in interventions focusing on mental health and employment, Ozamiz, Gumplmaier and Lehtinen (2001) noted that few had the explicit primary goal of improving mental health and wellbeing as a strategy to promote employment, although many programs reported improvements in wellbeing and psychological functioning as an unintended or secondary consequence. With few exceptions, it was only programs targeted to people with low prevalence psychiatric disorders that had the primary goal of addressing mental health problems. However, Ozamiz et al. (2001) concluded that early intervention and preventative activities with a focus on mental health were highly cost effective, and recommended more emphasis be placed on such projects in the future.

In the following sections, we review interventions that focus on the individual (micro-level interventions) that are potentially applicable to the Australian social policy context. Again, we utilise Table 1 as a framework and consider interventions within each stage of intervention (each cell of Table 1) in turn.

Proactive primary prevention—avoidance

Proactive primary prevention initiatives include early intervention, family/childhood programs, and quality education. Such approaches are often so distant from the actual experience of unemployment or welfare dependence that it

difficult to recognise or quantify their impact. However, if the health and social costs of unemployment and welfare dependence were included in cost/benefit analyses of such economic policies and options, the development of interventions to address these issues would be taken more seriously (for example, Dooley & Catalano 1999; Harris, Webster, Harris & Lee 1998; Harris and Morrow 2001). Similarly, analysis of the long-term health and social benefits of proactive primary prevention strategies need to be considered when assessing their cost effectiveness. For example, the Australian Society for Health Research (Access Economics 2003) recently produced a report discussing methodologies to quantify the impact of health interventions and demonstrated stunning returns on investment in health research and development.

Reactive primary prevention—ecological coping

The aim of stage-two micro-level interventions, reactive primary prevention, is to intervene immediately after, or in anticipation of a stressor. This may involve strategies targeting recently redundant workers, young people making the transition from study into employment, or those with caring responsibilities for children, the frail aged or people with a disability. This stage of intervention is most directly applicable to this review, encompassing programs and services that are readily situated within a social welfare or employment context. As such, we provide detailed discussion of these interventions.

The interventions grouped under this heading promote the personal and social resources or capacities that have been shown to attenuate or moderate the distressing effects associated with unemployment or welfare receipt. Research has investigated the effect of personal and psychological characteristics, coping strategies, and cognitive style on the health of people who are unemployed. Turner, Kessler and House (1991) examined how social support, self-concept, and cognitive coping processes moderate the effects of unemployment on mental health. Unemployed people who had access to a confidant, were integrated into informal social networks, had high self-esteem, and/or who avoided self-denigrating thoughts experienced less adverse psychological (and physical) outcomes than did those without these characteristics.

In addition, research in the United States has found that the association between welfare receipt and depression may be moderated by a person's sense of mastery (Danziger et al. 2001); exposure to significant life traumas (Coiro 2001; Danziger et al. 2000); sense of burden or indebtedness (Danziger, Carlson & Henley 2001); hopelessness (Petterson & Friel 2001); and lack of social support (Kalil, Born et al. 2001).

On the basis of this type of information, interventions can be designed that target the characteristics that may be the causal factors, moderators or mediators of the relationship between unemployment (or welfare receipt) and health.

Caveats

We emphasise that the types of interventions we are discussing do not provide a solution to the problems of unemployment or welfare dependence. We have sympathy with criticisms of interventions that focus on the psychological barriers of those who are unemployed, without acknowledging that unemployment is socially-determined, and requires a social solution (for example, Fryer 1999). That is, a comprehensive response to the problems associated with welfare dependence must address underlying structural and societal causes (and draw on approaches and strategies from all cells of the typology described in Table 1). From this perspective, interventions seeking to promote coping, resilience and enhance job search skills, but which fail to address the underlying issues responsible for unemployment, can be considered harmful. Indeed, they may raise expectations in a situation in which repeated failure is likely—a key risk factor for hopelessness and depression. Further, the focus of such psychological interventions on the individual potentially locates responsibility for the cause of the problem entirely with the individual and not broader society. The psychological approach alone also fails to take account of the demand side or broader economic policies. While building personal capacity and resources may promote employability at the individual level, it does not increase job availability and potentially involves churning misery (see discussion by Fryer 1999). It also does not take account of variables such as the economic cycle, different needs within different communities, or the different needs and experiences of different types of job seekers (see Dooley & Catalano 2000; Fryer 1999).

However, like researchers such as Creed (1998), Dooley and Catalano (2000) and Harris et al. (1998), we consider that psychological interventions have a role in the employment context, by promoting the health and wellbeing of welfare recipients, facilitating employment outcomes, and reducing social exclusion and isolation. Addressing mental health problems through social policy initiatives complements the health system approach (WHO 2001). It must, however, be placed within a context that recognises its limitations and advocates for broader and more wide-ranging solutions to the issue of health inequalities and more expansive discussion about the nature of work.

The sub-sections that follow provide a reasonably extensive discussion of five different interventions under the reactive primary prevention heading that have proven effectiveness and are, in our opinion, worth further consideration and evaluation in the social policy context. These include interventions based on cognitive behaviour therapy (CBT), improving self-efficacy, providing social support, adopting multiple-methods, and improving mental health literacy.

Changing explanatory style—cognitive behaviour therapy

Cognitive behaviour therapy targeted at people who are unemployed is one example of an employment-focused intervention that incorporates psychological principles and practices. Morrow, Harris and Harris (1999) provide an overview of

CBT in an employment context. Cognitive behaviour therapy teaches more adaptive, less negative ways of thinking about oneself, the world and the future. It emphasises the importance of cognitive processes, by demonstrating that people's thoughts determine their perceptions of, and feelings towards life events, and this determines behaviour.

Cognitive behaviour therapy has long-term benefits as it teaches strategies and techniques that improve coping abilities, and is relevant for people who do not exhibit clinical levels of mental health problems and for children. While CBT is generally delivered one-on-one in clinical practice, it can be delivered in group settings and use alternative modes of delivery (for example, via computers and self-help books).

Creed and Machin developed a CBT program for unemployed youth to improve their mental health and psychological functioning, and to help them develop skills to better deal with future problems. Evaluation showed that, immediately after the program, participants had improved levels of wellbeing, decreased psychological distress, improved self-esteem, and improved levels of coping (Creed et al. 1999). More importantly, these benefits were maintained four months later, suggesting the program did provide participants with strategies that helped them to deal with the stressors associated with unemployment. However, participation in the program did not have any effect on employment outcomes.

Proudfoot and colleagues in the United Kingdom provide another example of the use of CBT in an employment context, this time with unemployed professionals (Proudfoot, Guest, Carson, Dunn et al. 1997; Proudfoot et al. 1999). Compared to a control group, the CBT group demonstrated greater improvements in dealing with distress, and higher self-esteem, job seeking self-efficacy, life satisfaction and motivation for work. Again, most of these differences were maintained over a three- to four-month period. This study demonstrated substantial improvement in employment outcomes, with 49 per cent of the CBT group employed compared to 28 per cent of the control group.

There have been, however, some less successful implementations of CBT (for example, Harris et al. 2002; Machin & Creed 2003), perhaps due to inadequate implementation of the CBT intervention. Interventions for very disadvantaged groups (such as those in the study by Harris) may need to be more individually tailored, conducted at a slower pace, or include more behavioural, concrete activities.

To improve cost effectiveness, CBT can be delivered using self-help approaches, such as through books and manuals or by computers (Bower 2002). Proudfoot, Goldberg, Mass, Everitt et al. (2003) demonstrated the effectiveness of a computerised CBT interactive multimedia program within a general practitioner (GP) context compared to usual treatment (see Christensen & Griffiths 2002, for an Australian example). It is possible with very disadvantaged groups that facilitated self-help (Kupshik & Fisher 1999), whereby someone (not necessarily a

professional) assists by working through the self-help materials with the participant, could overcome some of the limitations of this approach with very disadvantaged groups.

Targeting self-efficacy and mastery

The JOBS Program is another preventative intervention designed to promote coping skills and address the mental health needs of people who are unemployed (Caplan, Vinokur & Price 1997). This intervention aims to improve participants' job search strategies and build job search skills. The training seeks to increase job search self-efficacy (participants' belief in their capacity to succeed in searching for a job); sense of mastery and control; and ability to resist demoralisation in the face of failure (inoculation against adversity). Large-scale evaluations of the JOBS Program have been conducted in the United States.

At one- and four-month follow-up periods, unemployed program participants had more confidence in their job search abilities, greater self-efficacy, and lower levels of depression than those in the control group (Caplan, Vinokur, Price & van Ryn 1989). Program participants also demonstrated superior employment outcomes. After four months, 54 per cent had found employment compared to 29 per cent of the control group. Further, participants had obtained superior quality jobs (for example, higher earnings, more consistent with career goals, more satisfaction). In a two-and-a-half year follow-up, participants reported less time out of work, fewer work transitions, and continued greater earnings (Vinokur, Price & Caplan 1991). The program was highly cost effective, with the individuals' increased earnings and tax returns significantly exceeding costs. The financial benefits of program participation were estimated to increase substantially across the life span (Vinokur, van Ryn, Garmlich & Price 1991).

Social support

Within the unemployment literature there is evidence that social ties, such as contact with friends and family (Bolton & Oatley 1987; Kasl & Cobb 1979), reduce the effects of unemployment on psychological wellbeing. A number of employment interventions, therefore, have been designed to improve social support as a strategy to promote positive mental health. Trials have included support group interventions, one-to-one support, and strategies to enhance natural networks. In one study, Harris, Brown and Robinson (1999) assessed the effect of 'befriending' on depressed women in a disadvantaged urban setting in the United Kingdom. Female volunteers acted as a friend for the depressed 'patients'. Results showed that women participating in the intervention demonstrated significantly greater rates of remission from depression. CRS Australia has recently considered the applicability of this type of approach to the Australian social policy context (Peart 2003).

Among Australian examples is a small-group mentoring program established for redundant BHP workers in the Newcastle area (Pond, Shevels, Sutton, Traynor, Cotter & Taggart 2002). Small groups of men met weekly. The groups were activity-focused and group members decided the activities or projects that they would undertake. The self-directed nature of the group promoted a sense of empowerment. The outcomes from the program, which has not been rigorously evaluated, seem positive and suggest that participation may have enhanced job search activities, participation in employment, voluntary work, psychological wellbeing, and levels of social interaction.

Multi-method approach

While we have outlined a number of interventions based on different approaches, it should be recognised that all of the programs employed multiple interventions. While the JOBS Program emphasised self-efficacy, it also focused on social support and problem solving skills. The CBT intervention of Creed et al. (1999) also boosted self-efficacy and self-management, while the program implemented by Harris et al. (2002) in south-western Sydney included elements of memory training, assertiveness training, and relaxation and meditation techniques.

Building understanding, managing expectations, promoting empowerment

Providing accurate information is an important component of mental health promotion. Jorm (2000) used the term 'mental health literacy' to describe the knowledge and beliefs about mental disorders that aid recognition, management or prevention. Strategies to improve mental health literacy include not only the broad community education campaigns described under the macro-level, but also individual education courses, such as the Mental Health First Aid program (Kitchener & Jorm 2002).

Improving the mental health literacy of people who are unemployed or receiving income support may help them understand their experiences and better manage their symptoms. Increased knowledge improves the individual's sense of control and empowerment. Pond et al. (2002) noted that, more than any other session, redundant BHP workers valued information sessions on the experience of retrenchment and strategies to cope with redundancy. This was likely because such information normalised participants' experiences, making them aware that their feelings and responses to redundancy were not unique.

Kieselbach (1999) notes that one initiative used in Germany to assist people who are unemployed is to provide brochures containing information on the relationship between unemployment and health for both health professionals and people facing unemployment. Similarly, one element of the Unemployment and Health Project conducted by Harris and colleagues in western Sydney involved seminars and presentations by local GPs on the health effects of unemployment.

Summary

We have outlined a number of interventions and approaches within the reactive primary prevention stage. We believe these provide an important starting point for the development of social policy interventions that seek to address common mental health problems as a way of promoting employment. All of the approaches have a sound theoretical basis and have evidence supporting their effectiveness. Work needs to be undertaken, however, to adapt the approaches to the Australian social policy context and to evaluate their effectiveness (including cost effectiveness) and applicability to different groups of income support recipients. We now move on to consider the remaining stages of micro-level interventions—secondary and tertiary prevention.

Secondary prevention—early detection and treatment

The interventions classified under secondary prevention are those that target early management of symptoms. To some extent, the interventions listed in the previous section may also be applicable here. However, our focus is on interventions for people with demonstrated mental disorders, and on methods to improve the identification of those requiring assistance.

Identification is critical for the delivery of appropriate assistance to income support recipients with mental health needs. Identification can include informal processes which rely on the insight, knowledge and awareness of customer service staff (whether in Centrelink or employment or social welfare agencies) to notice characteristics and behaviours indicative of mental health problems (Derr, Douglass & Pavetti 2001; Derr, et al. 2000), and formal screening and assessment processes. There are two aspects of formal identification. Screening involves a short set of questions used to detect individuals likely to have mental health problems. Screening tools are inexpensive and easy to administer, do not necessarily require professional expertise to deliver or score, and are often used in medical and community settings to identify ‘at risk’ clients. Those identified via screening are referred for more detailed professional assessment. Formal screening approaches have been introduced to welfare offices in the United States (Derr et al. 2000), with over 24 states screening all recipients for mental health problems and 26 states using formal screening tools (Department of Health and Human Services 2002).

In Australia, a number of assessment processes (such as the Job Seeker Classification Instrument) are used in Centrelink to identify at-risk job seekers for specialist follow-up, but these are not specifically designed to identify clients with mental disorders. Current processes largely rely on self-disclosure (Croft 2002; Eardley, Abello & MacDonald 2001) and, therefore, depend on self-awareness and willingness to provide such personal information. As a result, many people with mental health problems are not identified and do not receive appropriate assistance. The United States experience has been similar (Danziger & Seefeldt 2002). However, the introduction of formal screening does not necessarily

overcome this limitation, as disclosure is still dependent on the environment, with trust being a critical dimension. Rosman, MaCarthy and Wollverton (2001), for example, argue that screening tests may not be effective unless they are conducted within an established relationship, in which the goals of the screening are evident and meaningful to the participant (such as identifying barriers, strengths and support needs) and the participant believes that this will result in appropriate services being provided.

There may be concern that increasing mental health literacy and improving the identification of income support recipients with mental health problems will increase demand for services. While this may be the case, increasing recognition of mental health problems is consistent with the goals of the *National Mental Health Plan* and increased demand for mental health services by people in receipt of income support could potentially be managed by current initiatives, such as those in primary care (see next section). It would, however, also be appropriate to consider the adequacy and the potential need to increase the capacity of existing employment focused programs.

Tertiary prevention—medical care

Tertiary prevention interventions are the responsibility of the health portfolio. An effective tertiary prevention strategy, however, could involve promoting targeted referral of welfare recipients to medical professionals. In part, such referral depends on identification (mental health literacy, screening and assessment), as discussed in the previous section. The work of Harris and colleagues included efforts to promote linkages and partnerships with GPs and other mental health professionals.

The Better Outcomes in Mental Health Care initiative introduced by the Australian Government is improving the delivery of mental health services by GPs. Harris and colleagues (for example, Morrow et al. 1999) have recognised that GPs manage most of the mental health problems associated with unemployment and have, therefore, sought to improve the quality of service GPs provide, including helping GPs to promote employment and reduce the negative health impact of unemployment.

Comino, Harris, Chey, Manicavasgar et al. (2000) found that GPs treated depression and anxiety among unemployed patients differently from their employed patients, and were less likely to refer unemployed patients to self-help groups, and twice as likely to prescribe pharmacological treatments. Unemployed patients with symptoms were less satisfied with the treatment they received from their GPs than employed patients, and wanted more opportunity for discussion and more explanation about medications. There seems to be a mismatch of expectations between the GP and patients, perhaps reflecting a negative bias by GPs towards unemployed patients. In qualitative research (Harris, Silove, Kehag, Barratt et al. 1996), GPs reported that unemployed patients expected

pharmacological responses and considered many unemployed patients lacked the financial, social and personal resources to benefit from more active strategies. The project conducted by Harris included ongoing training and support for GPs, raising their knowledge and awareness of unemployment issues.

Similar options exist in European countries. For example, in Norway and Denmark, people who are unemployed are encouraged to undertake regular health check-ups to promote the early recognition, detection and prevention of disorders (for example, Ozamiz et al. 2001; Ytterdahl 1999). Further, as one response to welfare reform in the United States, several states have moved to better integrate mental health services and employment programs (Derr et al. 2001; Lennon et al. 2001). One option is for payment recipients to be linked or referred to existing community mental health services. Another is for employment programs to provide funding to expand mental health services or to actively incorporate short-term mental health counselling services (Derr et al. 2000).

4. Conclusions

In this paper we have sought to provide an overview of strategies and interventions available to improve the mental health of people receiving welfare payments (or others who are not in the labour force) and which could be implemented in, or are relevant to, the social policy context.

Initially, we provided a brief overview of why this topic is important. We noted that the consequences of common mental disorders, such as anxiety disorders and depression, are generally under-estimated despite the fact that mental illness is the leading cause of disability or impairment in Australia. We also noted that Australian and international data show that the rates of mental disorders and sub-clinical psychological distress are significantly greater among welfare recipients than the rest of the population. The experience of mental illness is likely to limit income support recipients' opportunities for social and economic participation and present a barrier to their (re)employment.

To assist in mapping the range of approaches available, we presented a framework in which to categorise interventions. This framework was based on the timing (relative to the stage of the disorder) and the level (targeted to individuals/families or at the broader community) of the intervention. This approach emphasised the need not to exclusively focus at the level of the individual. Interventions which target the individual may improve their wellbeing and their coping skills and resilience and may assist them into a job, but do nothing about the underlying social and economic causes of unemployment or welfare dependence and may be counter-productive. Thus, in the review we stressed the importance of the broader context, such as macro-level policies and strategies that can potentially improve the environment so as to promote better mental

health and reduce unemployment and welfare dependency. In particular, efforts to address the mental health barriers of income support recipients need to acknowledge and address the social exclusion that many welfare recipients may experience, and the lack of social capital within their communities. Further, we demonstrated the benefits of considering income support recipients through mental health promotion.

At the individual or micro-level, we identified a number of possible approaches that may be applicable to the Australian social policy context. Options to improve coping skills and resilience include addressing cognitive style through CBT, enhancing self-efficacy, and improving social support. We also discussed the benefits of increasing welfare recipients' awareness and knowledge about mental health problems, including the relationship with unemployment or welfare dependency. Increasing mental health literacy is equally important for customer service staff in Centrelink and welfare agencies, as it is a basis for identifying clients with mental health barriers, and knowing how best to respond (for example, referral to appropriate services). Informal identification processes can be supplemented by formal approaches based on the use of screening tools. Finally, we noted the importance of considering the pathways into, and improving the relevance of, existing services in the primary and specialist medical context, or specialised employment programs to better meet the mental health needs of people receiving income support payments.

The framework provided by the intervention typology is an important tool for social policy design. It facilitates the development of comprehensive and multi-faceted solutions to social problems. It promotes the identification of gaps in existing and proposed policy and service delivery responses. It also illustrates the importance of cross-disciplinary cooperation and the role of different professionals in developing comprehensive approaches to address such social problems (for example, social policy analysts, psychologists, psychiatrists, epidemiologists, behavioural medicine, economics, public health—see Dooley & Catalano 2000).

The challenge, however, is to design, implement and evaluate policy responses that fit with the Australian social welfare context. Clearly, we would support the adoption of a range of different and complementary interventions from across the intervention typology. In addition, collaboration and partnership (with researchers, practitioners, a range of government agencies, and the non-government organisation and private service sectors) is vital. Interventions need to be based on sound theories and a solid evidence base to ensure that the assistance provided to income support recipients will be effective and will result in long-term benefits and the achievement of positive outcomes (Creed, Machin & Nicholls 1998). Governance and planning is also critical. The design, implementation and management of pilots, trials and programs are critical to ensuring that program aims (addressing mental health barriers to promote employment outcomes) are actually assessed. Further, comprehensive and robust

evaluation methodology is also essential. While it may seem overwhelming, much has already been done (as outlined in this report) and the Department of Family and Community Services has recently conducted a number of relevant trials (promoting mental health literacy, providing psychological counselling, and delivering support and information via the Internet).

This paper has presented a brief overview of possible social policy responses to address the mental health problems experienced by many income support recipients, but it has significant limitations. The scope of the project was restricted to common mental health problems. As such, it did not consider low prevalence disorders, substance misuse, or the issue of co-morbidity (of either other mental health problems or physical disabilities). It is also not an exhaustive review, and only provides examples of programs rather than a complete listing of all research. Finally, it does not provide specific details of different approaches that could be implemented or what customer groups would most benefit.

Despite these limitations, we hope that this overview captures our enthusiasm about the possibilities in this area. We consider that mental health will become an increasingly important focus of welfare, employment and broader social policy in the future. Recent progress on the WORC Project (discussed earlier) serves to confirm the importance of our efforts in the welfare domain. In the context of our project, the WORC Project—with its aim of treating depression within the workplace—represents the ultimate early intervention program, by addressing mental health problems before they lead to job loss and welfare receipt. Further, if it is cost effective to address the burden of common mental disorders in the workplace, it is surely also important to consider the effect of mental health barriers among recipients of income support for whom mental illness is more prevalent and presents a barrier to employment. We suggest that there is a need to assess the cost effectiveness of implementing the types of interventions reviewed in this paper as a strategy to improve the social and economic outcomes achieved by welfare recipients.

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**APPENDIX 1.2: MEASURING SOCIAL CAPITAL AT THE
INDIVIDUAL LEVEL: PERSONAL SOCIAL CAPITAL,
VALUES AND PSYCHOLOGICAL DISTRESS**

(Berry & Rickwood, 2000)

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Measuring Social Capital at the Individual Level: Personal Social Capital, Values and Psychological Distress

Introduction

Most indicators of socio-economic well-being, health and crime in Australia have stayed the same or worsened over the last ten years (Hamilton, 1998), indicating a steady decline in social health. In the United States, widespread and steadily increasing

levels of violent crime have been linked to relative deprivation, falling social cohesion (Kawachi *et al.*, 1999) and a general erosion of social health (Kawachi & Kennedy, 1999). Similar declines in social health have been observed in more than 30 other countries worldwide (Putnam, 1995), including Russia (Kennedy *et al.*, 1998). Unhealthy communities are unable to build or maintain the physical and social infrastructure their members need to support each other and to realise their individual potential (Hancock & Duhl, 1988, in Baum, 1999). Healthy communities, in contrast, are vital and 'organic', constantly renewing their ability to respond to group goals and to the needs of individuals (Gilbert, 1993). The antecedents of social health outcomes are many and complex. Baum (1999) states that general health outcomes cannot be predicted by simple linear models but only by 'interactive model[s] of causality' which take account of a 'complex interplay' of factors. Current research indicates that the social antecedents of socio-economic and political well-being (Putnam, 1995) and general physical health in the community (Kawachi *et al.*, 1997) are indeed complex. From a psychological perspective, as Leeder (1998) suggests, it is intuitively logical to expect that healthy communities would be happier places in which to live than those which feature anonymity and distrust.

Healthy communities and social capital

Healthy communities have high levels of social capital (Kawachi *et al.*, 1997; Putnam, 1995). Lochner *et al.*

A B S T R A C T
It is proposed that social capital, a societal-level construct, can be measured at the individual level. This 'personal social capital' is a psychological construct defined as a logically linked sequence of social behaviours: community participation, social support and trust in others. Individuals who have more personal social capital will participate in their communities more and have more social support, greater trust in others and less psychological distress than those with less. It was also predicted that social values would influence levels of personal social capital, indirectly influencing distress. Structural equations modelling revealed that, within the construct of personal social capital, the strongest predictor of distress was community trust. Harmony values also directly predicted distress, while security values had an indirect effect via reduced community participation, social support and community trust.

(1999) has proposed that there are at least four overlapping constructs which tap some part of the notion of social capital: collective efficacy, psychological sense of community, neighbourhood cohesion and community competence. At a minimum, levels of social capital determine the extent to which people are able to interact in their communities in a way which is generally acceptable and which does not have to be maintained by coercion and legal battles (Saunders & Winter, 1999). At a more elaborate level, social capital defines a complex set of interrelationships between desirable community-level characteristics, such as trust, participation and co-operation, evident in the values, norms and 'dense' connections that allow people to work together for the common good (Putnam, 1995). Among these characteristics, trust is a micro-level outcome and is often considered the most valuable factor. Saunders & Winter (1999) proposes that trust is valuable because it leads to goodwill and spontaneous co-operation. This liberates community resources which would otherwise be directed into unpleasant and expensive 'coercion' and 'surveillance' activities (Gambetta, 1988, p221). For example, compared with 'informal social control', a feature of communities which enjoy high levels of social capital, formal policing is relatively ineffective in controlling crime and violence and much more costly (Putnam, 1995).

Social capital is often measured via surveys that count instances of civic engagement in a specific area, average them to derive a *per capita* mean and relate the mean to levels of trust and reciprocity in the same area. For example, in a study by Kawachi and his colleagues (1997), respondents in 39 states in the US reported whether they participated in a variety of 'voluntary associations', such as going to church and belonging to sporting teams. A mean level of participation was then calculated for each person and aggregated for each state. Participants were also asked to report the degree to which they agreed, on a Likert-type scale, with two statements about general trust ('most people can be trusted' – or 'you can't be too careful in dealing with people') and reciprocity ('most of the time people try to be helpful' – or 'are they mostly looking out for themselves?'). The mean levels of participation were then correlated with mean responses to the two statements. Strong relationships were found between participation, trust and perceived reciprocity, with higher levels of one consistently associated with higher levels of the others.

Personal social capital

While it seems abundantly clear that communities with higher levels of social capital enjoy on average better health and socio-economic outcomes than those less fortunate, it would not make sense to assume that all members of a healthier community would have equal access to its social capital, nor that all members of a less healthy community would be equally deprived. Some individual variation must be expected. Cox (1997) states that it is not possible to measure social capital at an individual level because it is made up of 'linkages and expectations and accumulates or dissipates through social interactions'. Others agree that it is an exclusively community-level construct (Lochner *et al.*, 1999). But the individual experience of living in a community with a given level of social capital, a 'personal social capital', needs to be acknowledged. The most similar construct at an individual level is social support. Yet for individuals, social capital is much more than the sum of their sources of social support. Personal social capital must account for individual social connectedness at the community level. This concept can begin to be explored by considering three interlocking facets of individual social behaviour – community participation, social support and trust – in describing how individuals connect with others in their communities. Indeed, it is precisely the nature and extent of the sometimes abstract and elusive links between individuals and their communities that personal social capital can capture.

Community participation and social support

Community participation can be measured through 'civic engagement', which is individuals' participation in the community for reasons over and above meeting basic survival needs (Putnam, 1995). Its opposite, 'civil disengagement', is about 'opting out of society in favour of anonymity' and living life alone or in a 'very nuclear group' (Leeder, 1998). Social detachment and alienation, which have 'soared' over the last 30 years (Putnam, 1995), threaten on a large scale the hopelessness, loss of belief and purposelessness originally proposed in Durkheim's concept of 'anomie' (Giddens, 1972 p173). One factor which protects people from alienation from others in their community is social support, a combination of the network of known others available to help an individual and the quality of help it actually delivers (Baum, 1999). Importantly, what matters to individuals is not the

jective features of their network but that they believe other people will support them when they need help (Cohen *et al.*, 1985). Some researchers have found that it is only support from a core person or intimate relationship that is important (Brown *et al.*, 1986) and that the availability of at least one confidant is the most discriminating of the social support variables (O'Neil *et al.*, 1984; Eisemann, 1984). People who report higher than average levels of social support also report lower than average levels of psychological distress and psychopathology (Procidano & Heller, 1983), lower physical morbidity (Berkman, 1995) and lower mortality (Kawachi *et al.*, 1997). It is proposed that a more general notion of social support, one which includes relationships which are not necessarily close and may even be passing contacts with unfamiliar others, is an important aspect of connectedness. These more general contacts are expected to add to conventional social support networks and generate more of the same types of benefits.

Trust

The final element of personal social capital is trust. In general terms, to trust is to decide consciously that other-acting people will choose (Gambetta, 1988, p219, p229) to keep safe something that matters to the trustor (Baier, 1986), enabling a desirable outcome that would otherwise be impossible (Coleman, 1990, 1997). Trusting people means relying on their word (Lotter, 1980) when the trustor risks disadvantage (Coleman, 1990, pp91-99) and when it is not possible to predict how they will behave (Gambetta, 1988, p218). Trusting is about negotiating risk (Hart, 1988) so as to live 'as if' possible undesirable outcomes will not eventuate (Lewis & Weigart, 1985). Trust is a person's subjective belief that others will honour their commitments, negotiate honestly and not take excessive advantage, even when they could (Cummings & Bromiley, 1996). People's level of trust in familiar others depends on factors such as how well they know someone, the network of friendships and acquaintances surrounding the interaction and past behaviour (Burt & Knez, 1996). For unfamiliar others, trust is part of and proportional to the social capital available in the community in which the individual operates (Cox, 1997). When investment in social capital is high, communities are healthier because pervasive levels of trust are high and are relatively unreservedly extended, with all their benefits, to people generally in the community.

Values

Measures of social capital describe at a societal level volitional engagement with the community and general trust in others. Personal social capital seeks to measure the nature and extent of people's connection with their community at an individual level. While individual differences between people would not be captured by societal-level measures of social capital, they would be apparent in measures of personal social capital. For example, perceived social support, which is part of personal social capital, differs according to certain individual personality traits (Procidano & Heller, 1983). Another factor which may affect levels of personal social capital is what people believe individuals and society should be like, or their values. Values have been shown to predict other areas of social attitudes and behaviours (Braithwaite, 1994). For example, values predict how people vote and why, which kinds of institution they trust and their attitudes to contemporary political issues (Braithwaite, 1999). It has been proposed that social values can be reduced to two broad dimensions, 'harmony' and 'security' values (Braithwaite, 1997; Feather, 1995). Harmony values reflect a belief that people should be open and co-operate with others for the greater good of all. Examples of harmony values are 'human dignity' and 'rule by the people'. Security values suggest that society should be controlled and people should compete against others to accumulate and protect personal benefits. Examples of security values are 'reward for individual effort' and 'national greatness' (Blamey & Braithwaite, 1997). Certain attitudes and behaviours have been shown to be associated with the value orientations. For example, people who accept security values and reject harmony values vote for the more conservative parties in general elections, are unlikely to go on strike, are against affirmative action and the welfare state and support harsher penalties for convicted criminals (Braithwaite, 1997; 1998; 1999). Some research has also indicated that, while security values robustly predict a variety of social attitudes and behaviours, harmony values often do not (Braithwaite, 1997).

The present study

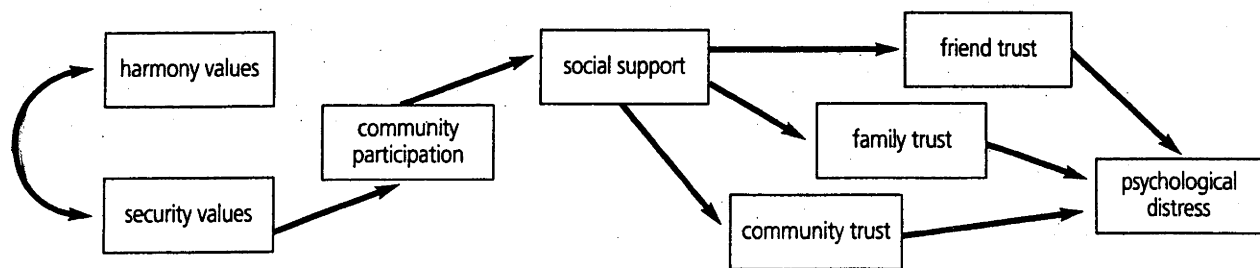
The two broad aims of this study are to operationalise the individual measure of personal social capital and to describe how it is influenced by individual factors, such

as different value orientations, and how it can in turn influence individual outcomes, such as psychological distress. It is proposed that personal social capital will be made up of community participation, social support and trust, and that all three will be systematically related. Since individual differences in acceptance of social values incline people towards different ways of relating to others and to their communities, different value orientations will be systematically associated with different levels of personal social capital and with psychological distress (*Figure 1*, below).

Community participation involves engaging in non-essential activity in the community. Engaging exposes participants to other people who share their interests and this generates opportunities to initiate and strengthen friendships, increasing the number of people who might provide support when needed. Participating in the community and receiving social support enhance the likelihood of developing trusting relationships with others. Kawachi and his colleagues (1997) have shown that higher levels of civic engagement, which is like community participation, are associated with higher levels of trust. Higher levels of community participation are thus predicted to be associated with higher levels of trust. More specifically, as it is hypothesised that community participation will predict social support, it is also hypothesised that the effects of community participation on trust will be mediated (Baron & Kenny, 1986) by social support; only social support will directly predict trust. This will be the chain of concepts comprising personal social capital. People who enjoy higher than average levels of social support suffer less psychological distress (Procidano & Heller, 1983). Because of the predicted chain of relationships, it is hypothesised that, while at the bivariate level each element of personal social capital will be associated with fewer symptoms of psychological distress, it will be trust alone that directly predicts distress. The effects on distress of community participation and social support will be fully mediated by trust.

Harmony and security values have been shown to be associated such that higher levels of acceptance of one dimension predict higher levels of acceptance of the other (Braithwaite & Law, 1985). As security values consistently predict specific attitudes and behaviours (Braithwaite, 1997), it is hypothesised that participants who report greater acceptance of security values will connect socially in predictable ways. Security values supporters tend to be more competitively oriented towards others (Blamey & Braithwaite, 1997), 'low trusters' who will not trust others until their trustworthiness has been established (Rotter, 1980). Their 'distrust may become the source of its own evidence' (Gambetta, 1988, p234) and lead them to avoid participating in the community, fearing others might attempt to obtain an unacceptable advantage over them. This would expose security values supporters to fewer opportunities to meet new people and make friends, leading to the hypothesis that they will also report lower levels of social support. Lower levels of community participation and social support would, in their turn, provide fewer opportunities to build trust in specific others and in people generally in the community. It is thus predicted that supporters of security values will report lower levels of trust and, consequently, more symptoms of psychological distress. People who report greater acceptance of harmony values are consistently more co-operatively and trustingly oriented towards others (Blamey & Braithwaite, 1997). Though they might thus be expected to seek interactions with others, especially if they feel those interactions could benefit society, harmony values often display weak predictive power in relation to specific attitudes and behaviours (Braithwaite 1997). Because the levels of measurement in this study are very specific, it is hypothesised that the associations between harmony values and the measures of personal social capital will be weak. It is therefore predicted that there will be no significant relationship between harmony values, community participation, social support, trust and psychological distress.

FIGURE 1 Path Diagram



Method

Participants

Participants were 162 members of the general community, 57% (92) women and 43% (70) men, aged 16 to 100 years ($M = 40.24$, $SD = 14.86$), from Canberra, Australian Capital Territory (ACT) and the surrounding region. They were drawn from 400 randomly selected staff of a government organisation and their family members, friends and acquaintances. Questionnaires were returned by 68 staff and 162 others. To avoid any accidental bias towards any characteristics of the organisation, only the non-staff respondents were included in the analysis. Sample statistics on age, income and educational level did not correspond with population parameters for the ACT available from Australian Bureau of Statistics census data 1997 (Australian Bureau of Statistics, 1998). The sample was older than the ACT in general (sample $Md = 40.58$ years, ACT $Md = 31.60$ years), exhibited higher levels of education (for tertiary qualifications or higher, sample = 55.60%, ACT = 44%) and lower income (sample $Md = \$A31,200-51,999$ annually compared with ACT household income, $M = \$A79,888$). Data were collected by self-report questionnaire over a six-week period.

Measures

Values

Social values were measured using the Social Goals Value Inventory (Braithwaite, 1982). This scale comprises two sub-scales, one with ten items tapping orientation to harmony values and the other with six items tapping orientation to security values. Each item is scored on an asymmetrical seven-point scale. Mean harmony and mean security scores were calculated by averaging the ten harmony items and the six security items. Final scores range from 1 to 7. Higher scores represent greater acceptance of the value.

Community participation and social support

Community participation was measured using a scale developed for this study based on indicators of civic engagement reported in recent research (Kawachi *et al.*, 1997). The scale comprises five ways in which adults participate constructively in non-essential

activities in their communities. These are 'education', 'social groups' (such as clubs and societies), 'spiritual development' (including going to church or meditation groups), 'community service' (such as unpaid charity work) and 'community organisation and leadership' (such as organising support groups and serving on boards). Though being in paid employment is an important way in which people participate constructively in their communities, it was not added to the five categories of non-essential activity because most Australians are not in a position to choose not to work. Each item is scored 1 = 'yes' or 0 = 'no' with participants indicating whether they had taken part in each activity during the last four weeks. Total summed scores range between 0 and 5, with higher scores meaning more community participation. Social support was measured using the Interpersonal Support Evaluation List (Cohen *et al.*, 1985). Three sub-scales were used: appraisal (getting feedback and advice from others), belonging (being a valued member of a social group) and tangible support (having people available to offer practical and material support). Each item is scored 1 = 'yes' or 0 = 'no'. Total summed scores for each sub-scale range between 0 and 10 and, for the full scale, between 0 and 30, with higher scores representing higher levels of social support.

Trust

Trust was measured using the 12-item version of the Organizational Trust Inventory (Cummings & Bromiley, 1996). The inventory was developed to measure trust in organisations and has been adapted for use in this study to measure trust in three target groups: extended family, close friends and people generally in the community. Items include statements such as 'I feel that people in my family keep their word to me' and 'I think that people generally in my community succeed by stepping on others'. Each item is scored on a seven-point Likert-type scale from 'strongly disagree' to 'strongly agree'. Total summed average scores range between 1 and 7, with higher scores indicating higher levels of trust.

Psychological distress

General psychological distress was measured using the 12-item version of the General Health Questionnaire (GHQ) (Goldberg & Williams, 1988). The GHQ can be used to identify psychiatric cases (Goldberg, 1981, pp129-136), with scores of 0 or 1 indicating no

symptoms of distress, 2 or 3 indicating a 'mild' case, with some symptoms of distress, and scores of 4 or more indicating moderate to severe distress, or 'severe' cases (Goldberg, 1972). Final total summed scores range between 0 and 12.

Results

Descriptive statistics and bivariate correlations for all predictor variables are presented in *Table 1*, below, together with their zero-order and partial correlations with the GHQ and Cronbach alpha coefficients.

Psychological distress

GHQ scores in the current sample ranged from 0 to 12 ($M = 2.87$, $SD = 3.27$). Of the 162 respondents, 76 (47%) reported no psychological distress. A further 31 (19%) exhibited mild distress, the remaining 55 (34%) reporting moderate to severe distress.

Values

Mean scores for harmony and security values were not identical to those obtained in a recent normative sample (Blamey & Braithwaite, 1997). Participants attached greater importance to harmony values ($M = 5.80$ compared with 5.61) and less importance to security values ($M = 5.29$ compared with 5.54).

Harmony and security scores were associated, showing that participants who reported greater acceptance of one value dimension were inclined to report greater acceptance of the other. Harmony and security values were weakly associated with the GHQ scores, indicating that participants who reported greater acceptance of either value orientation, especially harmony, experienced higher levels of psychological distress.

Components of personal social capital

Social support

With means well above the scale midpoints, respondents reported high levels of social support in all three domains of appraisal, belonging and tangible support. All three sub-scales were substantially intercorrelated and each was associated with the GHQ in the expected direction such that higher levels of each were associated with lower levels of psychological distress

Trust and community participation

With mean scores well above the scale midpoints, participants reported consistently high trust in their friends and, to a lesser extent, in their families. People generally in the community were less trusted than family and friends. This pattern was confirmed via a

TABLE 1 Descriptive Statistics and Bivariate Correlations for Predictor Variables and Zero-Order and Partial Correlations with the GHQ

	Social support						Trust			r(GHQ)	
	Security values	Harmony values	Tangible support	Appraisal support	Belonging support	Community participation	Family trust	Friends trust	Community trust	Zero-order	Partial
Security values										.19*	.06
Harmony values	.28**									.22**	.23**
Social support											
Tangible support	-.05	-.08								-.20*	.01
Appraisal support	-.13	-.13	.67**							-.19*	-.05
Belonging support	-.04	-.08	.67**	.59**						-.29**	-.21**
Community participation	-.25**	-.01	.10	.21**	.22**					-.20*	-
Trust											
Family trust	.06	.09	.19*	.18*	.27*	.01				-.29**	-.20**
Friends trust	.06	.17*	.26**	.27**	.35**	.05	.38**			-.12	.05
Community trust	-.19*	.04	.30**	.31**	.36**	.23**	.36**	.34**		-.41**	-.28**
Mean	5.29	5.80	8.93	7.77	8.39	1.9	5.80	6.05	4.78	-	-
SD	.95	.73	1.96	2.35	2.31	1.27	1.09	.67	.92	-	-
Minimum	2.50	3.80	0.00	1.00	0.00	0.00	1.00	3.67	2.17	-	-
Maximum	7.00	7.00	10.00	10.00	10.00	5.00	7.00	7.00	6.46	-	-
Cronbach's	.82	.85	.84	.65	.83	-	.93	.90	.93	-	-

* $p < .05$, ** $p < .01$

repeated measures analysis of variance, Wilk's $\lambda = .34$, $F(2,160) = 150.35$, $p = .000$, multivariate $\eta^2 = .65$. During the last month respondents had participated in an average of two forms of non-essential activity in their communities, with 13% reporting no participation and 12% reporting participating in four or more different types of activity. Community participation was not associated with trust in family or friends. However, it was significantly associated in the expected direction with community participation, showing that respondents who participated more in the community also reported higher levels of trust in people generally in the community. Community participation was significantly associated with the GHQ with respondents reporting higher levels of participation also reporting less psychological distress.

Testing the theoretical model

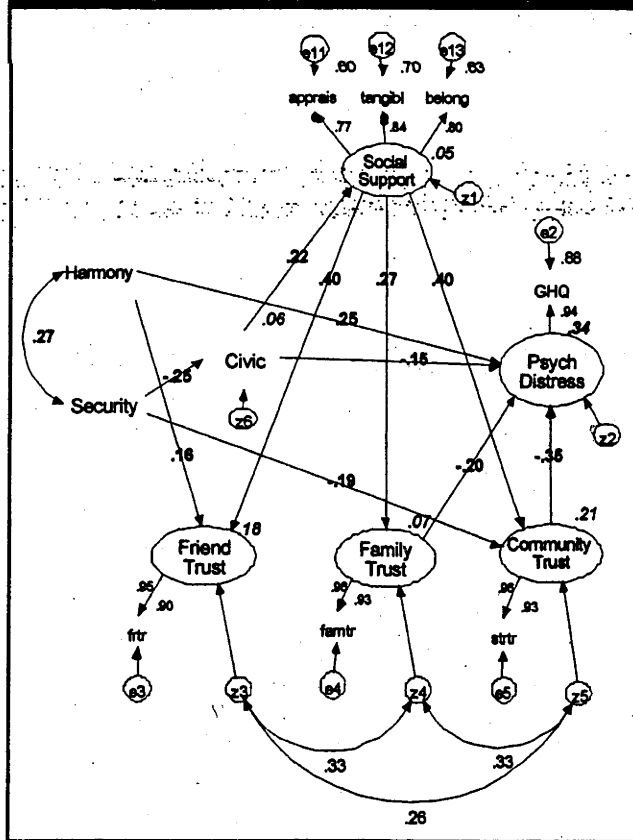
To test the adequacy of the hypothesized model, structural equations modelling was employed using AMOS Version 4 (Arbuckle, 1994–1997). The model was fitted using a Maximum Likelihood estimation procedure. Testing of assumptions for multivariate outliers, normality and homogeneity of variance did not reveal any serious violation of assumptions. The hypothesized model (Figure 1) did not fit the observed data well ($\chi^2(19) = 67.00$, $p < .00$, GFI = .91, AGFI = .82, CFI = .48, RMSEA = .13). In an attempt to obtain a better-fitting model, non-significant paths were excluded and the modification indices were examined. Figure 2, below, presents a revised path model which fits the data well ($\chi^2(11) = 16.12$, $p > .10$, GFI = .97, AGFI = .93, CFI = .96, RMSEA = .05). The significant predictors of psychological distress were harmony values, community participation, trust in people generally in the community and trust in family. All paths shown are significant at $p < .05$.

Psychological distress was directly predicted by harmony values and by lower levels of community participation, trust in family and trust in people generally in the community. The model accounted for 6% of the variance in community participation, 5% of the variance in social support, 21% of the variance in community trust and 34% of the variance in psychological distress. The revised model shows that acceptance of harmony values was significantly associated with acceptance of security values. Community participation was significantly predicted by acceptance of security values. Social support was

significantly predicted by higher levels of community participation. Trust in people generally in the community was significantly predicted by rejection of security values and by higher levels of social support. The effect of community participation on psychological distress was mediated by social support which, in turn, was mediated by trust in family and people generally in the community, indicating indirect influence on psychological distress for both predictors.

This study examined three components of personal social capital, community participation, social support and trust, and how they are related. First, studies of social capital have proposed that trust is an outcome of civic engagement (Putnam, 1995). This study found that greater community participation, which is like civic engagement, was indeed associated with greater trust in people generally in the community. One mechanism through which this operates was identified. Greater participation leads to increased social support and this leads to increased trust. Second, social capital theorists have asserted that trust is an important socio-economic asset (Putnam, 1995). This study indicates that it is also an important psychological asset in that it protects against psychological distress. Finally, it has

FIGURE 2 SEM Diagram



proposed that it is trust in strangers which
ers in social capital (Cox, 1997). This proposition is
orted by the finding that community participation
ked to community trust and not linked to trust in
ly or friends.

Discussion

Measuring personal social capital

Specifically, the study revealed that, consistent with
native data, participants who expressed greater
eptance of harmony values also expressed greater
eptance of security values. As predicted, participants
o expressed greater acceptance of security values
orted less community participation and lower trust
people generally in the community. In contrast to the
hypotheses, there was no relationship between security
ues and social support or trust in family and friends.
As predicted, community trust fully accounted for the
ects of security values, community participation and
social support on psychological distress. Consistent
with the hypotheses, harmony values were not related
to community participation, social support or trust.
Harmony values independently predicted psychological
distress, though this was not predicted. As predicted,
people who reported participating more in their
communities also reported higher levels of social
support, more trust in others and less distress. People
who participated more in the community reported, as
hypothesised, greater trust and less distress. Also as
predicted, community participation, social support and
trust were all linked such that higher levels of one
are associated with higher levels of the others.
Higher levels of each were, as hypothesised, associated
with less distress. Trust was, as expected, predicted by
higher levels of community participation and social
support. The findings support the hypothesis that,
within personal social capital, trust alone impacts
directly on distress.

At a more explanatory level, the study reveals five
ways in which values and personal social capital
affect on psychological distress (see *Figure 2*),
providing support for Baum's (1999) view that
'health outcomes can only be predicted by complex
interactive model[s] of causality' and proposing an
answer to Putnam's (1995) question about whether
community participation causes trust or vice versa. First, attaching
importance to harmony values predicts greater
distress, and this is worthy of further investigation.

Second, the more people accept security values, the
less they participate in the community and the less
social support they have. This reduces their trust in
people generally in the community, which increases
distress. Third, the more people accept security values,
the less they trust people generally in the community
and the more distress they report. Fourth, the more
people participate in their community, the less distress
they experience, irrespective of their levels of social
support. Finally, the more people trust their family the
more they trust people generally in the community,
and this reduces distress.

Clannishness and distrust

The paths that link security values and distress are
explained further by considering how social support
and trust relate to distress and how security values
impact on these relationships. Two interesting findings
emerged in relation to social support. The first is that
security values did not directly predict lower social
support. One possible explanation relates to family,
which is especially important in social support. If
security values are associated with an unwillingness
to trust or co-operate with unfamiliar others, the
importance of the family (a group of very well-known
people) may be inflated, possibly resulting in a degree
of clannishness. Second, social support did not directly
predict distress. This finding was supportive of the
hypothesis but not of a large body of previous research
into social support, which has proposed that social
support directly influences psychological well-being
(Prociano & Heller, 1983). That is, social support is
protective against distress but only because it
increases the likelihood of trusting unfamiliar others.
As supporters of security values tend to participate less
in the community, they receive less social support than
more active participants. This translates into lower
levels of trust in people generally in the community,
which is in turn linked to greater psychological distress.

Trust and distress

Of trust in friends, family and community, only
community trust directly predicted distress, and it
did so powerfully. Thus an important factor that
determines distress is the extent to which people
believe unfamiliar others are trustworthy. Trust
involves making decisions about another person's
morality and intent and about whether harm resulted
from 'malice' or a 'slip' (Åkerström, 1991). Coming to

believe that another person acted with ill-intent damages trust (Gambetta, 1988, p231) and distress follows. That is, the link between trust and distress is the assumption of 'benign intentions' (Dunn, 1990; Tyler & Dawes, 1993, p96). This helps explain why security values supporters tend towards distrust and distress. By inclination they are low trusters and low trusters tend to suspect ill-intent. It is possible that, fearing losing what might be crudely construed as the competition of life, they initiate a self-destructive cycle of behaviour. As Rotter (1980) argues, on the one hand low trusters cheat significantly more than high trusters and respect the rights of others less. On the other hand, they feel untrusted, are more often taken in by confidence tricksters and are seen as sadder, less attractive, less ethical and less desirable as close friends than high trusters. These judgements are made by high and low trusters alike. This distressing state of affairs may not lead people to believe their physical survival is threatened, but it may threaten their psychological security. As Marguerite, a 47 year-old supporter of security values, wrote: 'How sad it is not to feel I trust people'.

This is preliminary research attempting to operationalise social capital at the individual level and it needs to be replicated with other samples. But the study suggests that personal social capital can be measured and is protective against psychological distress. When Leeder (1998) asks 'what is the relationship between choirs and good health?', one answer might be 'a belief that people are generally trustworthy'.

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APPENDIX 1.3: TRUST AND DISTRESS IN THREE GENERATIONS OF RURAL AUSTRALIANS

(Berry & Rodgers, 2003)

Trust and distress in three generations of rural Australians

Helen Berry and Bryan Rodgers

Objectives: *Social connectedness has been associated with mental health outcomes. One study proposed that social connectedness influences mental health only indirectly because it is associated with a protective factor – trust. Trust is typically measured using the one-item measure in the World Values Survey (WVS). There are methodological difficulties associated with this measure and thus with interpreting findings. The aims of this study are to evaluate two approaches to measuring trust and to elaborate on the relationship between trust and distress.*

Methods: *A random sample of 969 members of a rural community completed an anonymous self-report postal questionnaire including the Organisational Trust Inventory (OTI), the World Values Survey measure and the K10 as a measure of general psychological distress.*

Results: *The OTI produced the more powerful and richer explanation of the relationship between trust and distress. Overall, women reported greater trust than men, and older Australians reported less distress and greater trust than younger people. Greater trust was associated with less distress, but the patterns of association differed between age generations.*

Conclusions: *This research highlights the importance of trust for mental health. Generational differences in the extent and meaning of trust have implications for social policy and planning.*

Key words: *generations, psychological distress, rural mental health, trust.*

Social connectedness, the set of linkages individuals have to people and groups in their community, has been associated with mental health outcomes. Higher levels of individual connectedness are associated with fewer mental health problems,¹⁻⁶ particularly for vulnerable people or those with special needs.⁷ For example, one study compared the social connectedness and mental health of immigrants with those born in the community.⁸ Participating in the community, religious observance and being in a relationship were beneficial to everyone's mental health, but particularly to the immigrant residents.

A recent Australian study has proposed that individuals' connections to their community influence mental health only indirectly through the concept of trust.⁹ Those who reported more connections with their community also reported more trust in others. It was particularly social trust, the trust individuals have in unfamiliar others, that directly predicted psychological distress. This suggests that social connections may be beneficial not so much in themselves but because they are associated with a protective factor – trust.

Trust is thus a key factor in the link between social connectedness and mental health and it is important to understand trust and how its influence operates. This necessitates examining methodological issues, including the way in which trust is measured. The aims of this study are to evaluate two approaches to measuring trust and to elaborate on the relationship between trust and distress.

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Issues in measuring trust

In social connectedness research, trust is typically measured using the one-item measure in the World Values Survey (WVS).¹⁰ The wording varies between studies but commonly appears as: 'Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?'.¹¹ There are methodological difficulties associated with this measure and thus with interpreting findings:

- 1 Trust is a complex abstract concept, yet it is not defined. To understand its association with mental health, it is important to define the concept.
- 2 If trust is not defined, a reliable, meaningful method for measurement cannot be developed. Data gathered using a fuzzy measure cannot generate clear findings.
- 3 The WVS item contains two statements between which respondents choose. Yet the items are not mutually exclusive and it would be feasible to agree or disagree with both. Using a 'forced-choice' format inhibits analysis of how respondents think about others.
- 4 It is not sufficient to measure a complex phenomenon with a single item: such concepts are dense, containing a multiplicity of subtleties. Even if the concept were unitary, a sole item would not capture its full range of meaning. Further, trust is contextual, depending on whom is being trusted and in what situation. Trust is also dimensional and it would be reasonable to expect that any relationship between trust and mental health would be proportional to the degree of trust. For example people's level of trust in familiar others depends on factors such as how well they know someone, the network of friendships and acquaintances surrounding them and past behaviour.¹² Using a measure of trust that has a single item with a dichotomous response format cannot capture these issues.
- 5 Using the term 'trust' in a measure of trust is problematic because trust is a value. Values reflect society-level consensus about desirable ideals towards which society 'should' strive.¹³ There is thus consensus that trust is a desirable feature of society and that people should behave in ways that promote trust. This has two implications for the WVS item. First, when asked directly about trust, people are likely to err on the side of agreeing because they know they 'should'. Second, the value 'trust' may be confounded with actually trusting other people and it would not be possible to know which was behind the respondent's answer.

Criteria for a satisfactory measure of trust would therefore include it being based on a theoretical

definition of trust, operationalised to assess specific aspects of trust. No item in the measure would contain the word 'trust'. It would be a multi-item scale that could tap different aspects of trust and would not require respondents to choose between items. It would also have a multipoint response format allowing sensitive gauging of respondent degree of trust.

Defining trust

Turning to the first of these criteria, in general terms to trust is to decide consciously that freely acting people will choose¹⁴ [p.219, p.229] to keep safe something that matters to the truster.¹⁵ This enables a desirable outcome that would otherwise be impossible¹⁶ [p.97]. Trusting people means relying on the word¹⁷ when the truster risks disadvantage¹⁶ [pp.91-9] and cannot predict how they will behave.¹⁴ Trusting is about negotiating risk¹⁸ so as to live 'as if' possible undesirable outcomes will not eventuate.¹⁹ Cummings and Bromiley²⁰ define trust as comprising three dimensions, believing that people attempt to honour their commitments, avoiding taking excessive advantage of others and dealing honestly with other people who trust are those who are more rather than less inclined to express such beliefs. Using this working definition of trust, Cummings & Bromiley have developed a 'properly validated' instrument, the Organisational Trust Inventory, that addresses each of the criteria listed above.

To evaluate the relative strengths of two approaches to measuring trust, it is necessary to compare them directly to each other and to compare them in relation to a relevant outcome. If both measures assess trust, they will be associated such that individuals who report greater trust on one measure would be more likely to report greater trust on the other. Thus, the trust measures will be positively correlated. Since previous research suggests that those who report higher levels of trust also report fewer symptoms of general psychological distress, it is also predicted that both measures of trust would be negatively correlated with measures of distress. Further, a valid and reliable measure of trust would be expected to produce stronger statistical associations with distress than a poorer measure and also enable a richer and more precise interpretation of the relationship between trust and distress.

METHOD

Participants were 969 residents of the Eurobodalla Shire in southern New South Wales. Five hundred and six women (52.2%) and 463 men (47.8%), aged 19-97 years ($M = 52.76$, $SD = 18.26$), randomly drawn from the electoral roll for the seat of Eden-Monaro who completed an anonymous self-report questionnaire. Introductory letters were sent to 3000 possible participants, followed a few days later by the que

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tionnaire, an information sheet and a prepaid return envelope. Three weeks later, a reminder postcard was sent. Response rates among younger males were extremely low, so a second set of 1200 working-age male residents was approached with the same materials. The response rate for the sample ranged between 8% for men aged 18–27 and 63% for women aged 57–68. This research is part of the Eurobodalla Study of personal community connectedness and mental health.

Trust was measured in two ways. First, the Organisational Trust Inventory (OTI),²⁰ originally developed for measuring trust in organisations, was used. A short-form of the OTI contains 12 items and has been adapted for use in the general population.⁹ Three subscales tap separate dimensions of trust: belief that most people keep commitments, negotiate honestly and avoid taking excessive advantage of others. Items are scored on a seven-point scale. Final average scores range between 1 and 7 with higher scores indicating higher levels of trust. All scales exhibited a high degree of internal consistency (Cronbach alphas ranged from 0.77 to 0.90). While the OTI is expected to offer a better measure of trust than the WVS, with 12 items, it may be too long for inclusion in studies where brevity is essential. The OTI will therefore be evaluated to ascertain whether a subset of the items would retain validity and reliability. Trust was also measured using the one-item measure of trust from the WVS.¹⁰ The item as used is scored 1 = 'most people can be trusted', 0 = 'you can't be too careful', so that higher scores mean greater trust.

General psychological distress was measured using the 10-item version of the Kessler Psychological Distress Scale (K10).²¹ This screening scale has been validated on Australian respondents²² and measures symptoms of non-specific psychological distress. Each item was scored on a five-point scale from 1 = 'none of the time' to 5 = 'all of the time'. Final summed scores have a minimum of 10 and a maxi-

mum of 50, with higher scores indicating higher levels of distress. Scores in the present sample ranged from 10 to 44. The scale exhibited a high degree of internal consistency (Cronbach alpha = 0.88). Participants also stated their sex and year of birth.

RESULTS

Psychological distress

Recent research using the K10 in a large national sample has identified average levels of distress among Australians (mean = 14.2, median = 12).²² It has also identified morbidity rates, with 68% of respondents scoring under 15 (indicating little or no distress), 29% scoring between 15 and 30 (moderate distress) and 3% scoring over 30 (severe distress). Scores in the present sample revealed higher mean levels of distress than the Australian norms (mean = 18.29, median = 17) and higher rates of morbidity (33%, 62% and 5%, respectively).

Trust

Mean scores on the OTI full scale and subscales were just above the mid-points (scores ranged from mean = 4.66–4.98, SD = 0.93–1.25), indicating that on average respondents agreed to a small degree with the propositions that most people keep commitments, negotiate honestly and avoid taking excessive advantage of others. For the WVS item, two-thirds of respondents (n = 643, 66.36%) selected the proposition that 'most people can be trusted'. As hypothesised, all measures of trust were significantly correlated such that individuals reporting more trust on one measure tended to report more trust on the other. The WVS item and the OTI scales were moderately associated (Table 1). The three subscales of the OTI were strongly intercorrelated, as expected (Table 1).

Trust and distress

All trust measures, as predicted, correlated significantly and negatively with the K10 such that those

Table 1: Reliability for trust measures, correlation matrix for measures of trust, sex, age and psychological distress

	Cronbach's α						r(K10)			
		1	2	3	4	5	Sex	Age	Zero-order	Partial†
1. World Values trust	–	–					0.08 ns	0.11	–0.31	–0.09 ns
Organisational Trust Inventory										
2. Full scale	0.90	0.52	–				–0.12	0.17	–0.46	–0.37
3. Keep commitments	0.79	0.47	0.90	–			–0.13	0.16	–0.40	–0.07 ns
4. Negotiate honestly	0.77	0.43	0.85	0.76	–		–0.11	0.16	–0.36	–0.08 ns
5. Don't take advantage	0.85	0.45	0.86	0.63	0.53	–	–0.10	0.12	–0.40	–0.22

All correlations are significant at $p < 0.01$ unless indicated non-significant (ns).

†After adjustment for sex and other measures of trust.

who reported higher levels of trust also reported fewer symptoms of distress. In all cases, zero-order correlations between the WVS item and distress were smaller than between the OTI scales and distress, as expected. Zero-order correlations for distress and trust with sex indicated that while women and men did not differ in their levels of distress, or trust as assessed by the WVS item, women reported higher levels of trust on the OTI. This effect was confirmed via a one-way analysis of variance ($F(1,13.65) = 16.18$, $p = 0.000$, multivariate $\eta^2 = 0.02$).

Trust and distress across three generations

Zero-order correlations for age indicated that older respondents reported significantly fewer symptoms of distress ($r = -0.13$, $p < 0.01$) and greater trust (Table 1). Interactions significant at $p < 0.05$ between age, the WVS trust item and the OTI subscales were found indicating that the associations between trust and distress differed with age. To assist in interpreting this interaction, respondents were allocated to one of three age-groups based on research proposing that generations differ substantively in their levels of trust²³ [pp.251–261]. Respondents born 1961–1984 were allocated to 'Generation X' and those born 1945–1960 to the 'Baby Boomers'. Those born before 1945 were allocated to the 'Long Civic' generation, so called because, in America, this generation has always been particularly civic-minded.

One-way analyses of variance confirmed that older generations reported significantly less distress ($F(2, 431.88) = 11.01$, $p = 0.000$, multivariate $\eta^2 = 0.02$) and greater trust (WVS, $F(1,1.57) = 7.11$, $p = 0.001$ multivariate $\eta^2 = 0.02$; OTI, $F(1,10.67) = 12.75$, $p = 0.000$, multivariate $\eta^2 = 0.03$) than younger generations. Post hoc tests confirmed that Generation Y reported the greatest distress, followed by the Baby Boomers, with Long Civics the least. Post hoc test also revealed that while the Baby Boomers and Long Civics did not differ in their levels of trust as assessed by the WVS measure, they both reported significantly more trust than Generation X. In contrast, for the OTI full scale, differences in mean scores for Generation X and the Baby Boomers were not significant, while both reported significantly less trust than the Long Civics.

Hierarchical multiple linear regression was used to assess the relative contributions of the different measures of trust in predicting psychological distress (Tables 2, 3 and 4). To take account of the between-generation interactions, the sample was partitioned into the three generations. Sex was included in the first step of the regression to take account of significant main effects for sex when accounting for different measures of trust. There was no theoretical reason to include the WVS item in the second step of the regression before the OTI subscales or vice versa. Both

Table 2: Summary of hierarchical regression analysis for predictors of psychological distress for Generation X

Predictor	B	SE B	Beta	R ²	R ² change
Step 1					
Sex	-1.29	0.84	-0.10	0.01	0.01
Step 2					
Sex	-2.23	0.75	-0.16**		
OTI – negotiate honestly	-0.27	0.59	-0.04		
OTI – don't take advantage	-0.86	0.34	-0.16*		
OTI – keep commitments	-2.39	0.60	-0.34***	0.24***	0.23***
Step 3					
Sex	-2.31	0.74	-0.17**		
OTI – negotiate honestly	-0.18	0.58	-0.02		
OTI – don't take advantage	-0.53	0.38	-0.10		
OTI – keep commitments	-2.12	0.60	-0.31***		
World Values trust item	-2.79	0.83	-0.20**	0.27***	0.03**
Step 4					
Sex	-2.33	0.74	-0.17**		
OTI – keep commitments	-2.57	0.41	-0.37***		
World Values trust item	-3.11	0.80	-0.23***	0.26***	–

Significant at * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

B, unstandardised regression coefficient; SE B, standard error of B; Beta, standardised regression coefficient; R², proportion of variance explained; R² change, change in the proportion of variance explained.

Table 3: Summary of hierarchical regression analysis for predictors of psychological distress for Baby Boomers

<i>Predictor</i>	<i>B</i>	<i>SE B</i>	<i>Beta</i>	<i>R²</i>	<i>R² change</i>
Step 1					
Sex	0.48	0.70	0.04	0.01	0.00
Step 2					
Sex	-0.25	0.59	-0.02		
OTI – negotiate honestly	-1.47	0.45	-0.22**		
OTI – don't take advantage	-2.12	0.29	-0.41***		
OTI – keep commitments	0.16	0.46	0.02	0.29***	0.29***
Step 3					
Sex	-0.24	0.59	-0.02		
OTI – negotiate honestly	-1.47	0.45	-0.22**		
OTI – don't take advantage	-2.11	0.30	-0.41***		
OTI – keep commitments	0.17	0.47	0.03		
World Values trust item	0.01	0.79	-0.01	0.29***	0.00
Step 4					
OTI – negotiate honestly	-1.38	0.35	-0.21***		
OTI – don't take advantage	-2.07	0.27	-0.40***	0.29***	-

Significant at * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.**Table 4: Summary of hierarchical regression analysis for predictors of psychological distress for Long Civics**

<i>Predictor</i>	<i>B</i>	<i>SE B</i>	<i>Beta</i>	<i>R²</i>	<i>R² change</i>
Step 1					
Sex	-0.43	0.58	-0.04	0.00	0.00
Step 2					
Sex	-1.17	0.55	-0.11*		
OTI – negotiate honestly	-0.13	0.44	-0.02		
OTI – don't take advantage	-1.09	0.30	-0.24***		
OTI – keep commitments	-0.97	0.50	-0.17*	0.15***	0.15***
Step 3					
Sex	-1.26	0.55	-0.12*		
OTI – negotiate honestly	0.01	0.44	0.00		
OTI – don't take advantage	-0.92	0.31	-0.21**		
OTI – keep commitments	-0.93	0.49	-0.16		
World Values trust item	-1.44	0.67	-0.12*	0.17***	0.01*
Step 4					
Sex	-1.09	0.55	-0.10*		
OTI – don't take advantage	-1.36	0.25	-0.31***		
World Values trust item	-1.69	0.66	-0.14**	0.15***	-

Significant at * $p < 0.01$, ** $p < 0.05$, *** $p < 0.001$.

approaches were therefore tried and the change in $R^2_{(distress)}$ noted. When the WVS item is added before the OTI subscales, it contributes 10% to the explained variance in distress and the OTI contributes a further 12%. When the WVS item is added after the OTI subscales, it contributes a trivial 1% to explaining variance in distress compared with the OTI's contribution of 21%. This suggests, as expected, that the OTI scale is a more powerful predictor of distress than the WVS item and that whatever the WVS item measures is almost entirely captured by the OTI. The three subscales of the OTI were thus entered in the regression before the WVS item.

For Generation X, including sex in the first step of the regression contributed a non-significant 1% to explaining individual differences in levels of distress. The inclusion of the OTI subscales in the second step accounted for a significant and substantial amount of individual difference in levels of distress (23%). However, 'negotiating honestly' did not attain independent significance, despite its significant bivariate relationship with distress, suggesting that its effect is wholly accounted for by the other subscales. At this step, sex attained independent significance. The addition of the WVS item in the third step explained a further significant but trivial amount of individual difference in levels of distress (3%). At this step, 'avoiding taking advantage' lost significance, suggesting a mediating effect, while 'keeping commitments' and sex retained significance. To derive the most parsimonious model possible, non-significant predictors were removed one-by-one, based on their beta values, until only significant predictors remained. In the final solution, Generation X's distress scores were most strongly predicted by believing that others keep their commitments, followed by agreeing that most people can be trusted and lastly by being male. All the predictors together accounted for 26% of the differences in levels of distress within the Generation X group.

An identical procedure was followed for the other generations. For the Baby Boomers (Table 3), distress scores were most strongly predicted by believing that most people avoid taking advantage of others followed by believing that most people negotiate honestly. Both predictors together accounted for 29% of the differences in levels of distress within the Baby Boomer group. For the Long Civics (Table 4), distress scores were most strongly predicted by believing that others avoid taking advantage, followed by agreeing that most people can be trusted and finally by being male. All the predictors together accounted for 15% of the differences in levels of distress between respondents within the Long Civics group.

A three-item version of the OTI

It has been proposed that the 12-item version of the OTI may be too long for inclusion in studies in which

brevity is essential. To shorten the scale while still maintaining its integrity, two strategies are possible. One or more subscales could be omitted. For the sample as a whole and for the two older generations the 'not taking advantage' subscale represented the most important aspect of trust in regard to psychological distress. However, this was not the case for the Generation X respondents and nor did that subscale fully describe the experience of the other generations. This strategy is rejected. Alternatively, a representative item from each subscale could be selected. This is best done by examining the loadings of items on the subscales generated by exploratory factor analysis. The largest loadings indicate the items in the factor most representative of that factor. The most representative item from each of the subscales can be selected to make a new three-item scale which still taps each of the domains of the original scale. The shortened scale can then be evaluated against the original scale, the WVS and the distress scale.

A factor analysis using Principal Axis Factoring was performed for each subscale. Factor loadings range between 0.55 and 0.79 for the keeping commitment subscale, for the negotiating honestly subscale, they ranged between 0.55 and 0.81 and for the avoiding taking advantage subscale, they ranged between 0.7 and 0.82. The items selected for the new scale are 'most people you meet do what they say they'll do', '... make agreements honestly' and '... take advantage of those who are vulnerable' (reverse scored) representing each scale, respectively. The items were combined via a principal components analysis to form a new three-item version of the OTI. The new scale exhibited a high degree of internal consistency (Cronbach alpha = 0.70). Though bivariate correlations between the three-item scale and the WVS item and the K10 were not as strong as the correlation with the 12-item scale, they were nevertheless substantial. The correlation between the three-item scale and the K10 was, as for the full scale, much stronger than that with the WVS item ($r = -0.46$ for the 12-item OTI, $r = -0.40$ for the three-item OTI, $r = -0.3$ for the WVS).

DISCUSSION

As predicted, those who reported greater trust also reported less psychological distress and those who reported greater trust on the WVS measure also reported greater trust on the OTI measures. As predicted, the OTI measures were more powerful predictors of distress than the WVS measure and offered a richer and more precise account of the relationship between trust and distress. In particular, using the OTI (as adapted) showed that while, for all respondents, greater trust was associated with less distress, different aspects of trust were associated with distress for different generations.

The size of our sample was too small to explore between-groups differences in the relationship between trust and distress in greater detail. Further, the very low response rate among the youngest men in the sample means that the findings for the sample may not generalise to other young men – though they were consistent with the hypotheses and with findings for other age-groups. It is also possible that what we found in this rural location may not be found in other locations, or that rural experiences may not generalise to metropolitan areas. But while our findings need to be replicated in other samples, they do elaborate on the relationship between trust and distress.

The nature of this relationship differed significantly between generations. For this sample of Generation X Australians, believing that others are reliable is protective against distress. But for their parents, the Baby Boomers, the protective impact of trust came from believing that others are not out to take advantage and that people try to be honest. The Long Civic generation reported less distress when they believed that most people would try not to exploit the vulnerable. For members of Generation X and the Long Civic Generation, agreeing with the WVS item that 'most people can be trusted' also offered a very small additional degree of protection against distress.

While women and men did not differ in their degree of agreement with the WVS item, women expressed significantly more trust on the OTI scales than men. Though being male was protective against distress, women, like the members of the Long Civic generation, gained some differential protection by virtue of their greater trust in others.

CONCLUSION

Considering the meaning and dimensionality of trust elaborates on how trust and distress are linked and also on how these links differ between generations. The WVS item is a crude measure of trust and produces crude results. However, it has made a substantial contribution to research: it has highlighted the importance of psychosocial factors in shaping mental, physical and social outcomes; along with the OTI, it has shown that trust is an important psychosocial asset that can offer substantial protection against distress; and, with only one item, it is suited to studies in which brevity is essential. In this respect, the 12-item OTI falls short. However, the three-item version of the OTI meets the brevity criterion and, while there is work to be done in testing both versions of the OTI in other samples, they are both valid, reliable and subtle measures of trust that allow an informative exploration of the relationship between trust and distress. In this study, the use of the OTI has added to knowledge about psychosocial factors that influence distress in different generations of rural Australians.

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APPENDIX 2.1: ETHICS APPROVAL FOR THE CONDUCT OF THE EUROBODALLA STUDY



THE AUSTRALIAN NATIONAL UNIVERSITY

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Ms Helen Berry
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Dear Ms Berry,

Protocol 2001/35
Community participation: instrument validation study

On behalf of the Human Research Ethics Committee I am pleased to advise that the above protocol has been approved as per the attached *Outcome of Consideration of Protocol*. Please note that as a formality this approval is subject to formal ratification by the Committee at its next meeting on 27 July 2001.

For your information:

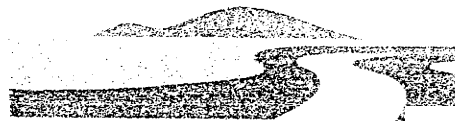
1. Under the NHMRC/AVCC *National Statement on Ethical Conduct in Research Involving Humans* we are required to follow up research that we have approved. Once a year (or sooner for short projects) we shall request a brief report on any ethical issues which may have arisen during your research and whether it proceeded according to the plan outlined in the above protocol.
2. Please notify the Committee of any changes to your protocol in the course of your research, and when you complete or cease working on this project.
3. The validity of this current approval is five years' maximum from the date shown on the attached *Outcome of Consideration of Protocol* form. For longer projects you are required to seek renewed approval from the Committee.

Yours sincerely,

Sylvia Deutsch
Secretary, Human Research Ethics Committee

APPENDIX 2.2: AGREEMENT OF THE EUROBODALLA SHIRE COUNCIL TO SUPPORT THE STUDY

01.5621



EUROBODALLA SHIRE COUNCIL

Good Government, better

30 July 2001

Helen Berry
Centre for Mental Health Research
Australian National University
ACTON ACT 0200

PO Box 99 Moruya NSW
email: council@eurocoast.nsw.gov.au
website: www.esc.nsw.gov.au

Dear Helen

Community Wellbeing in Eurobodalla

I am pleased to advise you that we have decided to support your study of community wellbeing in Eurobodalla Shire. In summary, the support we agree to provide covers the following:

- photocopying and collating of study materials
- enveloping of study materials
- addressing and mailing of study materials to possible participants
- providing participants with prepaid return envelopes addressed to you
- providing funding up to \$1500 for data entry (you will need to invoice Eurobodalla Shire Council for this amount)
- liaison with local indigenous communities

I understand that you have agreed to provide:

- original copies of study materials
- a list of names and addresses of possible participants for the study
- written instructions for the administration of the study
- funding for data entry in excess of \$1500
- other incidental costs of running the study, including drawing the sample.

I also understand that you have agreed to provide us with the findings of your study, including copies of articles, conference papers or other material that might be available from it.

For liaison purposes, please contact Ms Lynette Russell on telephone 4474 1066, or lynette.russell@eurocoast.nsw.gov.au. Thank you for the interest you have shown in Eurobodalla Shire. We look forward to hearing about your findings.

Yours sincerely

JAN SEATONBERRY
MANAGER
COMMUNITY SERVICES DIVISION

APPENDIX 2.3: AUSTRALIAN ELECTORAL COMMISSION APPROVAL TO DRAW A SAMPLE



Reference: 2001/141(gals4263)
Contact: Margaret Stretton
Telephone: (02) 6271-4687
Facsimile: (02) 6271-4457

West Block Offices
Parkes ACT 2600

PO Box E201
Kingston ACT 2604

Telephone (02) 627
Facsimile (02) 627
www.aec.gov.au
ABN 21 133 285 85

Dr Bryan Rodgers
Senior Fellow
Centre Fellow for Mental Health Research
Australian National University
CANBERRA ACT 0200

Dear Dr Rodgers

REQUEST FOR ELECTORAL ROLL INFORMATION FOR MEDICAL RESEARCH STUDY ABOUT MENTAL HEALTH AND DEPRESSION

Thank you for your letter of 30 July 2001 regarding the medical research project entitled 'Community participation: instrument validation study', for which you require name, address and gender details of all electors in the Division of Eden-Monaro, in ten year age ranges from 18 years (as at 1 August 2001), with addresses formatted for mailing.

As you have provided a copy of the required Ethics Committee approval for the study, for the Australian Electoral Commission (AEC) to meet your request, would you please sign and return the attached *Agreement for the Safeguard of Electoral Information Supplied for Use in Medical Research and Public Health Screening Programs* (the Safeguard Agreement) to this office as soon as possible.

The estimated cost of the data on CD-ROM is \$346.50. An invoice will be sent with the data.

Requests are generally filled within four weeks of return of the signed Safeguard Agreement. However, priority will be given to electoral related tasks that the AEC has on hand.

Please contact Margaret Stretton on the above number if you have any questions about your request.

Yours sincerely

Gabrielle Paten
A/g Director
Government and Legal

2 August 2001

APPENDIX 2.4: EXCERPTS FROM THE QUESTIONNAIRE

The following questions ask *whether or not*, and *how often*, you join in things with others in your community. The questions are divided into short sections about different people and activities. Please answer all the questions, even if you think you don't do much.

Please use this code to circle the number below each statement that is closest to being true for you.

Never, or almost never	Rarely	Occasionally	Sometimes	Quite often	Very often	Always, or almost always
1	2	3	4	5	6	7

8. IMMEDIATE HOUSEHOLD

"Immediate household" means significant others who usually live with you (eg, your partner, children, parents or other relatives).

a. I live alone.

(If "always, or almost always", please go to Question 9.)

1 2 3 4 5 6 7

b. I see people in my immediate household at the start of my day.

1 2 3 4 5 6 7

c. Members of my immediate household are home when I am home.

1 2 3 4 5 6 7

d. I spend my spare time with my immediate household.

1 2 3 4 5 6 7

e. I eat my main meal with members of my immediate household.

1 2 3 4 5 6 7

9. EXTENDED FAMILY

"Extended family" means any relatives or significant others who *do not* live with you.

a. I spend time doing things with my extended family.

1 2 3 4 5 6 7

b. I talk on the telephone to people in my extended family.

1 2 3 4 5 6 7

c. I see members of my extended family in person.

1 2 3 4 5 6 7

d. I prepare or eat meals with people in my extended family.

1 2 3 4 5 6 7

e. Someone in my extended family comes to my place to help out in a crisis.

1 2 3 4 5 6 7

f. Someone in my extended family comes to my place to help out with day-to-day things.

1 2 3 4 5 6 7

Please use this code to circle the number below each statement that is closest to being true for you.

Never, or almost never	Rarely	Occasionally	Sometimes	Quite often	Very often	Always, or almost always
1	2	3	4	5	6	7

10. FRIENDS, WORKMATES AND NEIGHBOURS

a. I make time to keep in touch with my friends.

1 2 3 4 5 6 7

b. My friends come over to my place or I go to theirs.

1 2 3 4 5 6 7

c. I talk to friends on the telephone or send them emails or letters.

1 2 3 4 5 6 7

d. I give my friends gifts such as birthday presents.

1 2 3 4 5 6 7

e. I go to work social events if I'm invited.

(If you work alone or do not do paid work please go to Question i in the next column.)

1 2 3 4 5 6 7

f. I do things at the weekend with people from work.

1 2 3 4 5 6 7

g. I spend my lunch or tea breaks with my workmates.

1 2 3 4 5 6 7

h. I socialise with my workmates before work, after work or during breaks.

1 2 3 4 5 6 7

i. I chat with my neighbours "over the fence" or "in the stairwell".

1 2 3 4 5 6 7

j. My neighbours tell me their news or I tell them mine.

1 2 3 4 5 6 7

k. My neighbours come over to my place or I go to theirs.

1 2 3 4 5 6 7

l. I talk with my neighbours about what's going on in our neighbourhood.

1 2 3 4 5 6 7

Please use this code to circle the number below each statement that is closest to being true for you

Never, or almost never	Rarely	Occasionally	Sometimes	Quite often	Very often	Always, or almost always
1	2	3	4	5	6	7

11. ORGANISED COMMUNITY ACTIVITIES

“Organised community activities” are any activities you do *in organised groups* for fun, education, social contact or worship – eg, sport (player, supporter, children’s sport), Italian club, bushwalking, support groups, RSL, drama groups, railway society, choirs, reading circles and playgroups.

Working for volunteer or charity groups are NOT included – they’re on the next page.

- a. I attend at least one group that organises activities in my community (eg, choir, sport).
1 2 3 4 5 6 7
- b. I go to religious services for special events like weddings.
1 2 3 4 5 6 7
- c. I go to courses or evening classes whenever I can.
1 2 3 4 5 6 7
- d. I take an active part in organised group activities (eg, choir, sport).
1 2 3 4 5 6 7
- e. I participate in distance learning (eg, by correspondence, via the internet).
1 2 3 4 5 6 7
- f. I visit places of worship as a sightsee or tourist.
1 2 3 4 5 6 7
- g. I go to rehearsals, training sessions, meetings or other organised group activities (eg, choir, sport).
1 2 3 4 5 6 7
- h. I study, do assignments or sit exams for a certificate, diploma, degree or other qualification.
1 2 3 4 5 6 7
- i. I make time to attend services at a place of worship.
1 2 3 4 5 6 7
- j. I take opportunities in my community to try out or learn new things.
1 2 3 4 5 6 7
- k. I pay membership fees to a group that organises activities in my community (eg, choir, sport).
1 2 3 4 5 6 7
- l. I go to prayer meetings with others who share my beliefs.
1 2 3 4 5 6 7

Please use this code to circle the number below each statement that is closest to being true for you.

Never, or almost never	Rarely	Occasionally	Sometimes	Quite often	Very often	Always, or almost always
1	2	3	4	5	6	7

12. COMMUNITY SERVICE AND VOLUNTEERING

“Community service” and “volunteering” are any kind of community work you do without being paid – eg, fundraising walks, Rotary, working bees, meals-on-wheels, selling raffle tickets, shopping for a sick neighbour, community boards, cooking sausages at a fete, Neighbourhood Watch, Red Cross.

This *does not include* unpaid home duties or caring for your children or grandchildren.

a. I subscribe to newsletters, magazines or papers published by a voluntary group or charity.

1 2 3 4 5 6 7

b. I do casual unpaid voluntary work or I help out for free locally.

1 2 3 4 5 6 7

c. I give money to charity if I'm asked.

1 2 3 4 5 6 7

d. I regularly renew my membership with a voluntary or not-for-profit group.

1 2 3 4 5 6 7

e. I do voluntary or charity work for local not-for-profit groups.

1 2 3 4 5 6 7

f. If I'm in a group doing voluntary work or helping out for free, I take responsibility for getting things done.

1 2 3 4 5 6 7

g. I join organising committees for voluntary or not-for profit groups.

1 2 3 4 5 6 7

h. If I'm asked, I buy products sold by charities (eg, Blind Society Christmas cards).

1 2 3 4 5 6 7

i. If I do voluntary work or help out for free, I take on jobs like secretary, coordinator or treasurer.

1 2 3 4 5 6 7

j. When it comes to voluntary work or helping out for free I'm one of the leaders or organisers.

1 2 3 4 5 6 7

Please use this code to circle the number below each statement that is closest to being true for you.

Never, or almost never	Rarely	Occasionally	Sometimes	Quite often	Very often	Always, or almost always
1	2	3	4	5	6	7

13. KEEPING UP WITH CURRENT AFFAIRS

“Keeping up with current affairs” means knowing what’s going on in the community or trying to help make a difference. This could mean simply taking an interest in current affairs – or even being in a group involved in current affairs, like a union, political party or a group that’s for or against something (eg, reconciliation, commercial developments, gay rights, changes to taxes).

a. I listen to the radio for news about national or international affairs.

1 2 3 4 5 6 7

b. I talk about current affairs with my friends or family.

1 2 3 4 5 6 7

c. I arrange meetings, send out information or help with other administrative tasks for a group involved in current affairs.

1 2 3 4 5 6 7

d. I read articles in the paper about national and international affairs.

1 2 3 4 5 6 7

e. I do things like wear badges or display bumper stickers to do with issues in current affairs.

1 2 3 4 5 6 7

f. I watch national or overseas news and current affairs on television.

1 2 3 4 5 6 7

g. I join unions, political parties or groups that are for or against something.

1 2 3 4 5 6 7

h. I write to local politicians to tell them what I think about things.

1 2 3 4 5 6 7

i. I read a free local newspaper.

1 2 3 4 5 6 7

j. I follow current affairs about my community on a local or commercial radio station.

1 2 3 4 5 6 7

k. I contact other members of my current affairs group to remind them to come to meetings, pay their dues etc.

1 2 3 4 5 6 7

l. If necessary I talk to a local politician about issues in current affairs.

1 2 3 4 5 6 7

Please use this code to circle the number below each statement that is closest to being true for you.

Never, or almost never	Rarely	Occasionally	Sometim es	Quite often	Very often	Always, or almost always
1	2	3	4	5	6	7

m. I encourage others to join a group involved in current affairs.

1 2 3 4 5 6 7

n. At election time I do things like display how to vote posters.

1 2 3 4 5 6 7

o. I go to meetings of a group involved in current affairs in my community.

1 2 3 4 5 6 7

p. I read the *Southern Star* or the *Bay Post*.

1 2 3 4 5 6 7

q. I go on demonstrations or marches.

1 2 3 4 5 6 7

r. I have opinions on issues in current affairs or the news.

1 2 3 4 5 6 7

s. I get involved in organising a current affairs group.

1 2 3 4 5 6 7

t. I go to meetings of a union, political party or a group that's for or against something.

1 2 3 4 5 6 7

u. I hand out leaflets for a group involved in current affairs.

1 2 3 4 5 6 7

v. I watch current affairs or news programs about local events on TV.

1 2 3 4 5 6 7

w. I write a letter to the newspaper or contact a radio station if I want to say what I think about current affairs.

1 2 3 4 5 6 7

x. I read articles in magazines about current affairs all over Australia and overseas.

1 2 3 4 5 6 7

y. I sign petitions if I agree with the cause.

1 2 3 4 5 6 7

Please make any comments here.

Question 14

These next questions are about how you've been feeling *recently*. Please use the answer code below to circle the number that is closest to how you've been feeling in the *last four weeks*.

Answer code:

None of the time	A little of the time	Some of the time	Most of the time	All of the time
1	2	3	4	5

In the last four weeks, *about how often* did you feel

- 1. tired out *for no good reason*?
1 2 3 4 5
- 2. nervous?
1 2 3 4 5
- 3. so nervous that nothing could calm you down?
1 2 3 4 5

- 4. hopeless?
1 2 3 4 5
- 5. restless or fidgety?
1 2 3 4 5
- 6. so restless you could not sit still?
1 2 3 4 5
- 7. depressed?

- 1 2 3 4 5
- 8. that everything was an effort?
1 2 3 4 5
- 9. so sad that nothing could cheer you up?
1 2 3 4 5
- 10. worthless?
1 2 3 4 5

Question 15

These questions ask what you think about the way *most people* you meet *usually* behave and what *you expect*. Please circle the number below each statement that is closest to your opinion according to the answer code.

Answer code:

<u>Definitely</u> disagree	Disagree	Disagree a bit	Neither agree nor disagree	Agree a bit	Agree	<u>Definitely</u> agree
1	2	3	4	5	6	7

a. Most people you meet keep their word.

1 2 3 4 5 6 7

b. Most people you meet tell the truth when they're sorting out a problem.

1 2 3 4 5 6 7

c. Most people you meet make agreements honestly.

1 2 3 4 5 6 7

d. Most people you meet succeed by stepping on other people.

1 2 3 4 5 6 7

e. Most people you meet *don't* mislead others.

1 2 3 4 5 6 7

f. Most people you meet take advantage of others' problems.

1 2 3 4 5 6 7

g. Most people you meet do what they say they'll do.

1 2 3 4 5 6 7

h. Most people you meet try to get the upper hand.

1 2 3 4 5 6 7

i. Most people you meet decide fairly what they expect from each other.

1 2 3 4 5 6 7

j. Most people you meet take advantage of those who are vulnerable.

1 2 3 4 5 6 7

k. Most people you meet try to get out of their commitments.

1 2 3 4 5 6 7

l. Most people you meet are reliable.

1 2 3 4 5 6 7

APPENDIX 2.5: INTRODUCTORY LETTER TO POTENTIAL PARTICIPANTS



THE AUSTRALIAN NATIONAL UNIVERSITY



Centre for Mental
Health Research

CANBERRA ACT 0200 AUSTRALIA
TELEPHONE: +61 2 6125 2741
FACSIMILE: +61 2 6125 0733
EMAIL: Helen.Berry@anu.edu.au
WEB: www.anu.edu.au/cmhr

Dear Madam or Sir,

I am writing to ask for your help in filling out a questionnaire that will be mailed to you in a few days. It is part of a program of research into community wellbeing that I am conducting at the Centre for Mental Health Research at the Australian National University. I am approaching you because your name has been selected at random from the Electoral Roll to take part in this research. If you would like to know more about how and why your name was selected, please read the information sheet enclosed.

The questionnaire I will be sending you is a survey of people living in Eurobodalla. It asks what sorts of activities you do in your community, if any, and what you think about life here. The survey aims to find out how much support local communities offer to those living in them.

The survey is anonymous and confidential and no information whatsoever can be traced back to you. After I have collected the information I need, the list of people I have contacted will be destroyed and no records of any kind will be kept. Please note that while I will be most grateful if you fill the survey in *you do not have to*.

I will send you more information when I send the survey. In the mean time, thank you for taking the time to read this letter. If you have any ethical concerns about the research please contact the Secretary, Human Research Ethics Committee, Research Services Office, The Australian National University, ACT 0200, Tel. 02-6125-2900 or email Human.Ethics.Officer@anu.edu.au.

Yours sincerely,

etc

APPENDIX 2.6: LETTER ACCOMPANYING QUESTIONNAIRE TO POTENTIAL PARTICIPANTS



THE AUSTRALIAN NATIONAL UNIVERSITY



Centre for Mental
Health Research

CANBERRA ACT 0200 AUSTRALIA
TELEPHONE: +61 2 6125 2741
FACSIMILE: +61 2 6125 0733
EMAIL: Helen.Berry@anu.edu.au
WEB: www.anu.edu.au/cmhr

SUPPORT IN YOUR LOCAL COMMUNITY

A Survey of Communities in Eurobodalla

About the survey

You may remember I wrote to you recently about this survey. It is part of my research at the Australian National University on how much support local communities give to those living in them. It contains questions about how much you participate in your community (if at all), what you think about this and what life is like here for you generally. Because I am interested in as wide a variety of opinions as possible, there are no right or wrong answers – just different views and experiences. The form takes about half an hour to fill in.

Your privacy

Any information you provide is completely anonymous and confidential. If you return your questionnaire, your answers will be entered into an anonymous computer database at the University along with everyone else's answers. *No information is individually analysed or handed on to anyone else.* Once the database is ready, the list of names and addresses of people I have contacted is destroyed. No personal records of any kind are kept about who participated.

Your agreement

I would be very grateful if you would fill in this form *but you do not have to*. If you do agree to take part, please answer the questions inside and then return the form in the envelope provided. You don't need a stamp.

More information

If you would like more information about this research, please contact me at the Centre for Mental Health Research, Building 63, Cnr Eggleston and Mills Rds, Australian National University, ACT 0200, telephone (02) 6125 8967, email Helen.Berry@anu.edu.au. If you have any ethical concerns please contact the Secretary, Human Research Ethics Committee, Research Services Office, The Australian National University, ACT 0200, telephone (02) 6125 2900 or email Human.Ethics.Officer@anu.edu.au.

Thank you very much.

APPENDIX 2.7: INFORMATION SHEET



THE AUSTRALIAN NATIONAL UNIVERSITY



Centre for Mental
Health Research

CANBERRA ACT 0200 AUSTRALIA
TELEPHONE: +61 2 6125 2741
FACSIMILE: +61 2 6125 0733
EMAIL: Helen.Berry@anu.edu.au
WEB: www.anu.edu.au/cmhr

HOW AND WHY DID WE GET YOUR NAME?

Health concerns like depression, anxiety, distress and others affect one in five of us at any one time, often causing great suffering. At the Australian National University we conduct research to understand and help improve health concerns like these. As part of this we think it is important to find out what is good for people's health and wellbeing, not just what causes problems. In the study you have been invited to join we want to find out what kinds of community support and involvement help people lead satisfying and productive lives.

Why we have approached you

In order to find out about issues like wellbeing we need to conduct research. To do this, we need help from members of the community such as you. Often we ask people to help by filling in questionnaires, like in this study. Because of the statistics we use to analyse the information people give us, we need hundreds of people to fill out our questionnaires. We cannot ask people we know to fill them out because this might not tell us anything about what most Australians think. Nor can we hand out a survey to every person in Australia. So we have to choose a selection of people to represent us all. To make it as fair as possible and to make sure we include all sorts of people, we try to get a "random sample". This means names have to come up by chance, like drawing numbers for a lottery.

The Australian Electoral Commission

This is where the Australian Electoral Commission (AEC) comes in. The AEC has a list called the “electoral roll” of every adult in Australia who is registered to vote in elections. The electoral roll is confidential and no-one except the AEC has access to it. However *for scientific research* which could improve knowledge about the *health* of Australians, such as this research, the AEC is allowed to release limited information to researchers from the electoral roll. The law that allows the AEC to release this information is called the *Commonwealth Electoral Act 1918*, section 91AB and paragraphs 91(4A)(e) and 91A(2A)(c). The relevant regulation is Regulation 10 of the *Electoral and Referendum Regulations*.

The information that the AEC is allowed to release is restricted to name, address, sex and age group. This information is only released under very strict conditions written down in the *Guidelines for the Protection of Privacy in the Conduct of Medical Research*. These are known as the “Privacy Guidelines” and are issued by the National Health and Medical Research Council under sub-section 95(1) of the *Privacy Act 1988*.

Ethical control of research and researchers

To be given names and addresses from the electoral roll, researchers first have to request from their own institution approval to conduct their study. At the Australian National University, researchers apply to the Human Research Ethics Committee, explaining in writing what the study involves and why it is important. The Ethics Committee considers the application. If it is satisfied that the study is worthwhile and meets ethical guidelines, it gives its approval for the study to go ahead. Researchers are held personally accountable for conducting their research according to the guidelines on human research described in the *National Statement on Ethical Conduct in Research Involving Humans 1999* issued by the National Health and Medical Research Council.

Getting your name

If the Ethics Committee at the University gives approval for the study, the researcher may then write to the AEC applying for names from the electoral roll. The application has to state what the research is about, how many names are needed and from which part/s of Australia. The AEC then considers the request and decides whether the study meets its own ethical standards. If so, the AEC will give the researcher a list of the right number of names and addresses drawn

from the part/s of Australia requested. The electoral roll is kept on computer and a computer program is used to draw the names randomly for the research.

Protecting your privacy

What all this really means is that your name and address can only be given to a proper researcher, for proper scientific research into health, and under very strict conditions that the researcher must follow. The researcher who receives your name is carefully supervised by independent bodies, like the Ethics Committee and the AEC, whose job it is to protect the privacy and interests of those being asked to help out with the research – you. For this research, you and the other people we are approaching to help us were selected at random by a computer program from the electoral roll for Eurobodalla.

More information

If you would like more information about The Australian National University Human Research Ethics Committee, please contact the Human Ethics Officer, Research Services Office, Australian National University, ACT 0200, telephone 6125 2900, or email Human.Ethics@anu.edu.au.

APPENDIX 2.8: SUMMARY OF MEDIA DISSEMINATION TO DATE OF THE FINDINGS OF THE EUROBODALLA STUDY³⁶

Local media

16 May 2003	South Coast Register (Nowra), (Mark Brandon)	Current affairs and mental health
7 May 2003	Bay Post, pp1 and 7 (Mark Brandon)	Current affairs and mental health
20 Dec 2002	ABC South East morning program (Mark Vale)	Trust and distress
23 July 2002	Radio 2EC morning program and news (Ian Duff)	Community wellbeing
22 July 2002	ABC South East radio news (Kim Treasure)	Community wellbeing
22 July 2002	ABC South East radio afternoon program	Community wellbeing
17 June 2002	Radio 2EC morning program and news (Ian Duff)	Community wellbeing
17 June 2002	Radio 2EC Power FM news (Ian Duff)	Community wellbeing
14 June 2002	The Bay Post (Kim Treasure)	Community wellbeing
11 June 2002	ABC South East morning program (Mark Vale)	Community wellbeing
11 June 2002	ABC South East radio news (Kate Acres)	Community wellbeing
13 Sept 2001	The Narooma News	Community wellbeing
12 Sept 2001	The Southern Star	Community wellbeing

³⁶ I do not always know when the study is reported in the media reports, except when I am interviewed, so this list is indicative only.

12 Sept 2001	The Bay Post	Community wellbeing
12 Sept 2001	Radio National, South East	Community wellbeing
6 Sept 2001	The Narooma News	Community wellbeing

National and international media

Aug 2003	Beyond 50, interviewed for article, Volunteering and Seniors (Joanna Hall)	Volunteering and mental health in older people
21 July 2003	ABC local radio, Bunbury, WA (Francis Bell)	Connectedness and mental health
15 July 2003	ABC local radio, WA (Kaleen Turner)	Connectedness and mental health
13 July 2003	Sunday Telegraph, Body and Soul (NSW, WA, SA, Qld), interviewed for article "Village People" (Christina Larmer)	Community and wellbeing
5 May 2003	BBC radio 5, UK networked international news program (Anita Anand)	Current affairs and mental health
5 May 2003	ABC 666 FM radio morning program, Canberra (Louise Marr)	Current affairs and mental health
3 May 2003	Sydney Morning Herald p3 (Adele Horin)	Current affairs and mental health
19 Sept 2002	The Bulletin, interviewed for lead article – "Super Kids" (Melissa Sweet)	Connectedness and wellbeing in kids
18 June 2002	Radio 702 ABC Sydney Breakfast (Angela Cattens)	Community wellbeing
14 June 2002	ABC 97.3 Illawara and SE radio (Dominic Brine)	Community wellbeing

APPENDIX 2.9: DISSEMINATION OF THE FINDINGS OF *THE EUROBODALLA STUDY* – CONFERENCE PAPERS, SEMINARS, GUEST LECTURES AND SPEECHES

Conference papers

Berry, H.L. Community participation and psychological distress: *The Eurobodalla Study*. International Federation of Psychiatric Epidemiologists, *Life Course Development*. 10th International Congress, Bristol, UK, 10-13 September 2004.

Berry, H.L. *Keynote address*. Participating in your community: Is it good for you? Council of the Rural City of Wangaratta Conference, *Our Community, Growing Stronger Together*, Wangaratta, Victoria, 12-14 November 2003.

Berry, H.L. *Keynote address*. Community participation and mental health in your backyard. ABC Radio Program Directors' National Conference, Ballarat, Victoria, 9-10 September 2003.

Berry, H.L. Trust and distress. Australasian Society for Psychiatric Research conference, *Mental Health from a Lifespan Perspective*. Canberra, 5-6 December 2002.

Berry, H.L. Personal community connectedness and distress. The Canberra Region Postgraduate Committee in Medicine, *The Canberra Hospital 9th Annual Scientific Meeting*. Canberra, 21-22 November 2002.

Berry, H.L. Community connectedness and mental health. RANZCP Section of Social and Cultural Psychiatry conference, *Setting Strategic Directions in Mental Health Policy and Practice: The Challenge of Understanding and Addressing the Social Determinants*. Cairns, 12-14 September 2002.

Seminars, guest lectures and speeches

Berry, H.L. Community participation and psychological distress. *Invited seminar* to the Commonwealth Department of Family and Community Services Mental Health Policy Group, Canberra, 6 July 2004.

Berry, H.L. Community participation and mental health. *Invited seminar* to Heads of Practice, Southern Area Health Service, Queanbeyan, 3 February 2004.

Berry, H.L. Community participation and mental health. *Guest speaker* to the Annual General Meeting of ACT Mental Health Consumer Network, Canberra, 30 August 2003.

Berry, H.L. Personal community connectedness and mental health. *Guest lecture*, School of Psychology Graduate Program in Clinical Psychology, Australian National University. Canberra, 8 April 2003.

Berry, H.L. Personal community connectedness and mental health. *Invited seminar*, Australian Institute of Health and Welfare. Canberra, 25 March 2003.

Berry, H.L. Community connectedness and mental health. *Invited Educational Seminar*, Division of Integrated Mental Health, Logan Beaudesert Hospital District, Queensland Department of Health. Brisbane, 8 November 2002.

Berry, H.L. Community connectedness and mental health. *Invited seminar*, Commonwealth Department of Health and Aging. Canberra, 3 September 2002.

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