

**Social and Cultural Risk and Protective
Factors for Mental Health in East London
Adolescents**

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Appendix 2

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Abstract

Background

There is substantial evidence of the protective influence of social support on psychological distress in adults. Yet, levels of social support and psychological distress vary by ethnicity. There is little research investigating prospective associations between social support and psychological distress in an ethnically diverse sample of adolescents.

Methods

This thesis is based on secondary analysis of data from 'Research with East London Adolescents: Community Health Survey' (RELACHS). RELACHS is a prospective cohort questionnaire study conducted in a representative sample of adolescents aged 11-14 years at baseline and 13-16 years at follow-up. The analyses address three questions: (a) Are there prospective associations between baseline social support and follow-up psychological distress and depressive symptoms? (b) Does a change in social support overtime influence psychological distress or depressive symptoms at follow-up? (c) Are the effects of social support and culturally similar friendship choices independent and can these account for ethnic variations in psychological distress or depressive symptoms at follow-up.

Results

Low levels of family social support were significantly associated with depressive symptoms for female pupils (adjusted analyses: OR= 2.70 95% CI 1.20,6.08). A decrease in total and family support overtime was significantly associated with depressive symptoms for female pupils (adjusted analyses: OR= 0.96 95% CI 0.93,0.98 and OR=0.61 95% CI 0.47,0.79 respectively). Social support could not account for ethnic variations in psychological distress or depressive symptoms. Culturally similar friendship choices were protective for psychological distress at follow-up.

Conclusion

Explanations for these findings include the possibility that family members [and peers from the same cultural group] provide a more consistent and healthy source of support than peers overall. Loss of family support appears to be risk factor specifically for girls from diverse ethnic groups.

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Introduction to the Thesis

Chapter 1

1.1 The Emergence of Psychological Distress During Adolescence

'Adolescence is a time of active deconstruction, construction, reconstruction—a period in which past, present, and future are rewoven and strung together on the threads of fantasies and wishes that do not necessarily follow the laws of linear chronology.'

Louise J. Kaplan, 1984

The transition between childhood to adulthood can involve numerous biological, psychological and social changes. Kaplan (1984) considers adolescence to be a period for exploration and self-expression for the adolescent and believes that adolescence does not 'necessarily follow the laws of linear chronology'. This suggests that developmental processes are iterative, yet, may not necessarily end in resolution. Epidemiological studies suggest a significant number of adolescents have mental health problems (Leslie, 1974; Offord *et al.*, 1987; Rutter and Smith, 1995; Prescott-Clarke and Primatesta, 1998). Some evidence also suggests that individuals born in the latter part of the twentieth century have higher rates of adolescent-onset mental health problems (Burke *et al.*, 1991; Collishaw *et al.*, 2004). Though there are vast methodological differences in the studies, McGee *et al.* (1990) suggest approximately one in five adolescents have some kind of mental disorder.

These findings are concerning for several reasons. Firstly, adolescent-onset mental health problems are more likely to recur in adulthood (e.g. Weissman *et al.*, 1999). Secondly, mental health problems are often co-morbid with disorders such as substance abuse (e.g. Angold and Costello, 1993) and with physical illnesses, such as diabetes (Kovacs, 1997). Thus, mental health problems during adolescence are an important issue that require further study.

Adolescence is often a turning point for adopting health related behaviours and factors associated with adverse mental health may be particularly influential during this time (Burke *et al.*, 1990). The adolescent experiences numerous changes - physical, social and psychosexual, where adolescence has traditionally been regarded as a period of stress and turmoil (e.g. Hall, 1904; Blos, 1967). Social changes in this transition period such as changing schools, experiencing new relationships and conforming to sociocultural norms may prompt reassessment of core values and beliefs and the way in which the adolescent views the role that they play in their perceived social world.

1.1.1 Socio-cultural Factors and Variations in Psychological Distress

Research in developmental psychopathology identifies risk factors that may predict behavioural or emotional problems or factors that promote resilience and recovery (Feehan *et al.*, 1995). Carbonell *et al.* (2002) define risk factors as 'those events, characteristics, or conditions that make a negative outcome more likely'. The presence of a risk factor may increase the likelihood of an illness, yet its presence may not be sufficient to predict subsequent disease onset. In such circumstances, some individuals may demonstrate resilience and utilise protective resources. Protective factors such as social support moderate the negative effects of risk factors during adversity (Barerra *et al.*, 2004; Cohen and Wills, 1985). Risk and protective factors may include individual as well as family characteristics and the child's social and physical environment (Brooks, 1994; Garmezy *et al.*, 1984). Specific factors, which may increase the risk of an illness developing, include genetic factors – investigated by the differences in concordance between monozygotic and dizygotic twins (e.g. Scourfield *et al.*, 2003). Bronfenbrenner (1979) placed child development in an ecological perspective with systems that shape subsequent behaviour. This provides an attractive framework for the multi-faceted forces that shape development and also accommodates for interactions between the predictive factors for mental health outcomes. Figure 1.1 below displays a model of Bronfenbrenner's ecological perspective and the various factors that influence development. Interactions between both the factors and between the layers occur. Also, one

should not underestimate the role of the individual's active influence on their environment. The individual can actively construct some of their environmental settings, such as the peer groups to which they belong.

Figure 1.1 Bronfenbrenner's (1979) Ecological Perspective of Development

Source: Dockrell and Messer (1999, p. 139)

Developmental-transactional models of psychopathology (Cicchetti and Toth, 1992; Sameroff and Chandler, 1975) assume risk factors for illness to be dynamic and influenced by transition events. Transition events across the lifespan have been described as events or changes that initiate a period of greater individual change, often with adverse consequences for mental health (Connell and Furman, 1984; Danish *et al.*, 1980).

The development of mental health problems is a complex process and may involve numerous factors. Although adolescent-onset mental health problems

have been associated with a number of adverse mental health outcomes during adulthood, factors associated with the risk of a disorder may also occur as a consequence of disorder. For example, it can be hypothesised that low levels of social support could act as a risk factor to depression. On the other hand, it could also be possible that those individuals experiencing depressive symptoms are less likely to seek out social support. Therefore, identifying the direction of effects between an exposure and an outcome is not straightforward.

1.2 Globalisation and Well-being

With an increase in globalisation and migration due to political or economic forces, recent research has emphasised the role of ethnicity and migrant status as potential determinants of mental health outcomes (e.g. Prescott *et al.*, 1998; Kuo and Porter, 1998). Globalisation has been defined by Bhugra and Mastrogianni (2004) as a process in which the traditional boundaries separating individuals and societies gradually and increasingly recede. This has resulted in increased awareness of variability across cultures and within them. The psychosocial consequences of migration such as mental health problems and problems associated with social integration (Bhugra, 2004) for both minority groups and the host community need examining.

The process of globalisation and migration has shaped numerous societies into culturally diverse communities. In the UK, most minority populations live in cities, particularly in London. It is not easy to determine how far an individual from a particular minority group is influenced by factors within their own cultural group, or by factors from the host culture, or the impact of these influences upon mental health for minority groups and the host population. The effects of intercultural contact may have different outcomes on psychological well-being depending on which psychological acculturation style is implemented (Farver *et al.*, 2002; Pawiluk *et al.*, 1996). Acculturation has been defined as a phenomenon which results when groups of individuals from different cultures come into continuous first hand contact with subsequent changes in the culture of either one or both groups (Berry, 1976).

One should also consider additional socio-cultural factors that can potentially account for ethnic variations in mental health problems. In an adult population, some authors suggest that minority groups with a South Asian ethnic background are more likely to be experiencing protective effects of social support (Sproston and Nazroo, 2002). The argument that individuals from South Asian groups experience protective effects of social support is an area that requires investigation. The effect of social support upon mental health outcomes amongst an adolescent and ethnically diverse sample needs to be considered alongside additional factors. For example, a population from a city is more likely to display higher levels of social deprivation compared with a rural area of the UK. As there is a higher concentration on minority groups in UK cities, it is worth considering effects of social deprivation whilst investigating whether social support can account for ethnic variations in mental health problems.

1.3 Overview of Thesis

This thesis investigates differences in rates of mental health in East London adolescents. More specifically, it will investigate the role of social support and friendship choices as predictive factors for mental health outcomes, measured by psychological distress (a definition of psychological distress is provided in Chapter 2 of the thesis).

Chapter 2 presents a review of the literature and critically evaluates the evidence to examine socio-cultural explanations for ethnic variations in mental health outcomes during adolescence.

Chapter 3 provides a description of suitable research methods to be used in this thesis to examine whether social support or friendship choices can account for ethnic variations in mental health outcomes during adolescence.

There are three chapters in this thesis presenting analyses and results. Chapter 4 is the first results chapter and will present prospective associations between social support at baseline and mental health outcomes at follow-up. At baseline (in 2001), participants in this study were 11-14 years of age and the same adolescents were followed up two years later in 2003, when they were 13-16 years of age. One of the main features of Chapter 4 is to present statistical analyses to assess whether baseline levels of social support can account for mental health outcomes at follow-up.

Chapter 5 presents statistical analyses to evaluate whether friendship choices (based on whether an individual has a strong or weak affiliation with their own or other cultural group) are prospectively associated with mental health outcomes at follow-up.

Chapter 6 presents statistical analyses to evaluate whether changes in social support over time can account for ethnic variations in mental health problems.

Chapter 7 provides a discussion of the findings from the thesis. The discussion aims to evaluate the meaning of the findings and how far the findings from the thesis contribute and add to the existing findings in the field.

Literature Review

Chapter 2

2.1 Synopsis of the Literature Review

2.1.1 Overall Aims of the Literature Review

This literature review identifies prospective cohort studies examining mental health outcomes amongst adolescent populations. This Chapter aims to address primarily two issues: firstly, whether there are differences in mental health problems during adolescence by ethnicity. A discussion on differences in mental health outcomes by ethnic group leads on to the second issue considered in the review; an evaluation of whether social support can account for ethnic variations in mental health outcomes.

The manner in which this review aims to answer these questions is to (i) define the constructs under investigation, (ii) identify the contribution of a particular research publication to the knowledge of the role of social support as an explanatory factor for ethnic variations in mental health problems and (iii) appreciate the limitations of findings and measures.

2.1.2 Objectives of the Literature Review

The main body of the literature review concerns summarising and interpreting study findings from the papers selected for review and discussing key findings from the literature. The current review focuses on ethnic variations in psychological distress and specific variables, such as social support, that may explain variations in mental health problems in minority and indigenous populations. Speculations into the protective effects of ethnicity are apparent in The Great Smoky Mountains Study and The Native Hawaiian Mental Health Research Development Program, yet investigations in this field require methodological limitations to be acknowledged.

Assumptions underlying the research findings are identified and the impact that these assumptions have upon the conceptualisation of constructs such as

ethnicity are discussed. Lastly, this chapter concludes by discussing the findings from the papers reviewed given the methodological and conceptual limitations from the studies and lists the hypotheses for this thesis.

2.2 Definition of Key Terms and Background Theory

Before presenting a review of the literature, theory relevant to the literature is discussed. This section does not provide an exhaustive description of the theory, but main themes of the thesis are discussed with the aim of providing the reader with clear definitions of terms such as social support. Definitions of key terms as well as discussion of relevant background theory is essential to interpreting the findings from the literature in the field and will have repercussions on the methods used in this thesis.

Firstly, a definition of the terms 'risk' and 'protective' is provided. Then overviews of the main theories of adolescence are discussed with specific reference to social and psychological changes that take place during this time. Thirdly, theories of social support are presented. Lastly a definition of ethnicity is provided and models of acculturative style are presented.

2.2.1 Risk and Protective Factors

The broad theme of this thesis involves identifying particular risk and protective factors associated with psychological distress as an outcome measure; understanding the mechanism by which risk and protective factors operate is essential to the aims and methods undertaken in this thesis

The term 'risk factor' was coined by Thomas Dawber (1951) when he identified factors such as high blood pressure and cholesterol to be associated with heart disease. As highlighted in Chapter 1 of this thesis, Carbonell *et al.* (2002) define risk factors as 'those events, characteristics, or conditions that make a negative outcome more likely'.

On the other hand, protective factors moderate the negative effects of risk factors such as high levels of social support (Barrera *et al.*, 2004; Cohen and Wills, 1985). Numerous psychosocial risk factors associated with mental health problems have been identified in the literature and recent research has highlighted the importance of resilience to risk factors. For example, Carbonell *et al.* (2002) investigated protective factors in 102 young adults at risk for depression using data from The Simmons Longitudinal Study. The authors selected risk factors from the literature and previous analyses based on the same sample (Kessler and Magee, 1993; Lewinsohn *et al.*, 1995; Reinherz *et al.*, 1999., Reinherz *et al.*, 1993). Of the 102 participants identified as 'at risk' between the ages of 18 and 26, 33 met criteria for major depression and 15 met criteria for resilience at age 26. Close family relationships and interpersonal relations act as a protective factor for those in the 'at risk' group.

Many of the publications selected for the literature review focus on risk, not protective factors, for a particular mental health outcome. It may also be of interest to investigate psychosocial protective factors for adolescence displaying resilience in the face of adversity. Once such factors have been identified, understanding the relationship between risk factors and health outcomes involves a more complex process.

2.2.2 Defining Adolescent Development

The World Health Organisation (WHO) defines adolescents as being between the ages of 10-19 years of age. During this time, numerous biological, psychological and social changes can affect adolescent development and a variety of theories attempt to explain the nature of adolescent development. As mentioned in Chapter 1, adolescence has traditionally been viewed as a time of 'storm and stress' (Hall, 1904). Since Hall's theory of adolescence, subsequent theories of adolescence have tended to reflect changing trends in psychological schools of thought and these schools of thought focus on different aspects of personality. For instance, Freud focused upon psychosexual factors to explain

adolescent development whereas, Piaget's theory focussed on cognitive aspects of adolescent development.

Table 2.1 below lists some major theories of development (with a particular emphasis on adolescent development) and the main processes that take place during adolescence according to each theory.

Table 2.1 Main Theories of Adolescent Development

Theory	Main Founder of the Theory	General Principle of the Theory	Principle of Theory in Relation to Adolescent Development	Implications of the Theory on Psychological Well-being
The Psychoanalytic Theory of Adolescent Development	Sigmund Freud	Human beings are not necessarily rational beings, but humans are irrational and influenced by hidden, unconscious motives. Each stage of psychosexual development is universal and individuals must move through these stages of development.	Adolescence is brought about during the biological maturation of the reproductive system. Impulses from the 'id' (seeking gratification and acting on impulses) clashes with the 'superego' (the moral component of the conscience). Through the use of the 'ego', the individual attempts to adapt to reality, During adolescence however, the 'id', 'superego' and 'ego' are thrown out of balance and this can cause psychological conflict.	Freud believed that 'frustration of normal sexual satisfaction may lead to the development of neurosis' (Freud, 1900/1953).
Erik Erikson's Theory of Identity Development	Erik Erikson	Individuals experience developmental stages throughout the life course. Erikson proposes 8 'Stages of Man'. Erikson emphasised the importance of the social context upon development.	Exploration of identity occurs during adolescence. Adolescence is characterised as the period of life during which the individual establishes a sense of identity. Peer groups are crucial in providing feedback for the adolescent to base their identity on.	Adolescents who fail in the search for an identity will experience self-doubt, role diffusion and role confusion. Erikson states that 'Many a late adolescent, if faced with continuing diffusion, would

				rather be nobody or somebody bad, or indeed dead...than be not be quite somebody' (Erikson, 1959, pg 132).
Cognitive Theory of Adolescence	Jean Piaget	Piaget's four levels of development are (1) infancy, (2) preschool, (3) childhood, and (4) adolescence. Developmental stages mean that no stage can be skipped and each stage involves the development of various cognitive structures.	Adolescence involves the Formal Operation Stage of development. Adolescents can think beyond the present and reflect about their thinking. Additional operations that take place are abstract reasoning and proportional reasoning.	Piaget did not focus on the application of his theory to mental health.
Lawrence Kohlberg's Cognitive Developmental Approach to Adolescent Morality	Lawrence Kohlberg	Kohlberg investigated the development of intellectual reasoning. Stages in moral development involve (1) the preconventional or premoral level of moral reasoning, (2) the conventional or moral level and (3) the postconventional or autonomous level.	Adolescents (as well as some adults) wish to conform to moral and social rules. They seek approval in their relationships and they seek to play their social role whilst living up to others' expectations.	Kohlberg did not directly focus on the application of his theory to mental health.
Urie Bronfenbrenner's Ecological Perspective of Development	Urie Bronfenbrenner	Bronfenbrenner conceptualized the environment into four ecological systems. These are: the microsystem, the mesosystem, the exosystem and the macrosystem. Bronfenbrenner developed the person-context model, where environmental factors (e.g. rural versus urban surroundings) are taken into consideration with individual attributes (e.g. low birth weight). The interaction between the environment and the	At any stage of life, including adolescence, Bronfenbrenner appreciates the context of development, people play different roles when they participate in various Microsystems (e.g. from the home to the peer group)	This theory did not directly focus on adolescent mental health implications. However, Bronfenbrenner's ecological approach took into consideration the breadth and

		individual are also taken into consideration.		complexity of variables affecting the individual.
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The majority of the theories named in Table 2.1 are not necessarily conflicting, yet they represent different developmental perspectives on adolescence. Some of these theories are more pertinent to the approach taken in this thesis than others. Rather than focus upon one aspect of development, Bronfenbrenner's ecological perspective considers both variables at the individual level as well as the variables from the wider context. This approach has implications for the research conducted as some measures can be both proximal to the individual and distal (e.g. indicators of socio-economic status).

2.2.3 Defining Social Support

Cohen *et al.*, 2000 pg. 29 states that 'any statement about social support mechanisms must be qualified by the fact that many different interpersonal processes and constructs have been included under the rubric of social support'. The dynamic and multi-faceted nature of constructs, such as social support, can potentially be problematic whilst drawing comparisons across studies.

Since Durkheim's (1897/1951) classic study on social integration and suicide, there has been substantial evidence illustrating an association between social support and psychological distress, particularly depressive symptoms, in adults. Cohen and Syme (1985) provide a broad definition of this dynamic and multi-faceted construct as 'the resources provided by other persons'. However, broad and varied definitions of social support may sometimes lead to inconclusive findings in research (O'Reilly, 1988). Leiberman (1986) argues that the term social support needs to be split into its component parts in order to grasp the conceptual understanding of the term. Social support can encompass a range of social interactions and Hupcey (1998) states that definitions of social support can include: type of support provided (Cohen *et al.*, 1985; Cobb, 1976; Lin, 1986; Pilisuk, 1982); recipients' perceptions of support (Tilden *et al.*, 1990; Albrecht and Adelman, 1987; Heller *et al.*, 1986); intentions or behaviours of the provider (Thoits, 1985; Shumaker and Brownell, 1984); reciprocal support

(Vaux, 1992; Antonucci, 1985); social networks (Lin *et al.*, 1979; Weiss, 1974; Thoits, 1982).

A limitation of cross-sectional studies designed to measure social support and psychological distress is that they cannot investigate direction of effects between variables (Antonucci and Depner, 1982). Prospective studies have found evidence to suggest lower levels of social support lead to an increased risk of depressive symptoms at follow-up (Windle, 1992). The protective effects of social support upon mental well-being can operate by two means: by having a direct effect on psychological distress, or by buffering the effects of adverse events. The buffering effect of social support reflects the notion of resilience, where high levels of social support (i.e. a protective factor) mitigate the effects of adversity. However, some research has found evidence suggesting that people experiencing depressive symptoms are less likely to seek out support (Coyne, 1977) and for that reason the association between social support and depressive symptoms are reciprocally related. One way in which this issue can be dealt with is by studying the association between variables prospectively, which is discussed in more depth at a later point in the literature review. Levels of self-reported social support vary by factors such as gender (Canty-Mitchell and Zimet, 2000); socio-economic status (Geckova *et al.*, 2003) and source of support (Garnefski and Diekstra, 1996). For example, females report higher levels of emotional support than men and these differences have largely been explained by gender differences in socialization.

2.2.4 Defining Ethnicity

Do certain migrant ethnic groups display a lower risk of mental health problems compared with an indigenous population due to the protective effects of social support? As mentioned above, understanding the relationship between these three variables is a complex process, and cannot be addressed before each

construct is defined. Zenner (1996) considers ethnicity to refer to a common heritage shared by a particular group. However, the use and definition of ethnicity as a variable in research has generated much debate (Sheldon and Parker, 1992; Coleman and Salt, 1996). There is a pressing need therefore to appreciate the limitations, context and methodological strengths and weaknesses associated with the use of ethnicity as a variable.

Senior and Bhopal (1994) identify four fundamental pitfalls associated with the use of ethnicity as a variable for research: difficulties of measuring the construct; heterogeneity of the populations being studied; lack of clarity about the research purpose of the study in relation to ethnicity; and ethnocentricity affecting the interpretation and use of data. To illustrate Senior and Bhopal's point that ethnicity is a difficult construct to measure, one must consider the numerous markers that have been used to define ethnicity. The Office of National Statistics (2003) list country of birth and parents' country of birth, nationality, language spoken at home, skin colour and religion as some of the measures used to define ethnicity. Each measure may individually be considered to be a very crude measure to indicate ethnicity and it may be the case that each measure is not sufficient independently as a measure of ethnicity. Senior and Bhopal (1994) provide the example that use of skin colour as a measure of ethnicity is an imprecise method of classification where an observer cannot distinguish between Muslim or Hindu groups, who belong to culturally distinct groups.

It is apparent that the heterogeneity of groups should be taken into consideration. Often however, small sample sizes of ethnic minority groups makes analyses based on ethnicity difficult. Even if ethnic variations in observed behaviour are apparent, Sheldon and Parker (1992) note that 'Rather than observed ethnic variation prompting study for underlying cause, it becomes the explanation; effect is converted into cause'. Rutter and Tienda (2005, pg. 335) are of a similar opinion and state that:

'Many analysts implicitly assume that ethnicity constitutes an explanation for variation in myriad psychosocial outcomes, rather than a phenomena to be explained.....whether by design or default, ethnic variation is often derived as a statistical residual rather than a starting point for sharp theoretical questions about which of its multiple facets operates to produce the outcome of interest ...'

Rutter and Tienda's statement above begs the researcher to measure multiple indicators of ethnicity and formulate research questions that can tease apart potential mechanisms underlying ethnic variations in the outcome of interest. Throughout the course of this chapter, it becomes evident that some researchers do not explore explanations underlying mechanisms for ethnic variations. Indeed, there is a tendency for some authors to attach assumptions based on ethnic stereotypes to the interpretation of their findings. This leads on to Senior and Bhopal's final point put forward regarding ethnocentricity affecting interpretation and use of data. A 'colonial' view of mental illness supported superiority of White groups. In Bevis' (1921, pp. 69-78) 'Psychological traits of the Southern Negro with observations as to some of his psychoses' illustrates this view by claiming:

'Naturally most of the race are care-free, live in the 'here and now' with a limited capacity to recall or profit by experiences of the past. Sadness and depression have little part in his psychological makeup. '

More recently, some authors argue that perceived racism and racial stereotyping during diagnosis of illness may account for higher levels of psychosis in all Black

minority groups (Karlsen and Nazroo, 2002; McKenzie, 2002). One way in which the researcher can reduce the oversimplification of ethnic variations in an outcome measure is by appreciating the wider sociocultural context of ethnicity in epidemiological research. Adjustment for factors such as socio-economic status may account for ethnic inequalities in health (Nazroo, 1997). However, the impact of socio-economic status on the association between ethnicity and psychological distress is addressed at a later stage in the literature review. Whilst reviewing the literature, this thesis attempts to deconstruct the underlying factors that may be associated with ethnic variations in the outcome measure.

2.3 Classification of Child and Adolescent Mental Disorders

DSM-IV is the most widely used diagnostic classification system in research, whereas ICD-10 is more widely used clinically. A major limitation of these classification systems is that they are not practical to use as screening measures in the general population. Although diagnostic tools allow for precise estimates of a specific mental disorder, such measures can be time consuming and not cost effective.

It will become apparent through the course of this review that not all of the studies selected for review used diagnostic outcome measures. The studies largely included measures of non-psychotic mental disorders. Classifications of mental disorders in adulthood are often distinguished according to whether symptoms are psychotic or non-psychotic. The main symptoms of psychotic disorders include hallucinations and delusions. On the other hand, non-psychotic disorders are based on behavioural and/or emotional symptoms such as emotional distress or behavioural symptoms can involve conduct or hyperactivity problems. In DSM-IV, childhood disorders usually first diagnosed in infancy, childhood or adolescence include learning disorders (mental retardation), a number of specific learning disorders, Autistic Disorder, Asperger's Disorder, Attention Deficit/Hyperactivity Disorder, Conduct Disorder, Oppositional Defiant Disorder, Childhood Disintegrative Disorder, various eating and tic disorders, enuresis, encopresis, selective mutism, attachment and

movement disorders. Various disorders described under the adult sections may also begin in childhood (e.g. Mood Disorders, Anxiety Disorders and Adjustment Disorders). The studies in this thesis largely deal with conduct and emotional disorders. As there is overlap between behavioural and emotional symptoms in many of the scales used in these childhood studies, mental health outcomes in this thesis are collectively referred to as measures of psychological distress i.e. non-psychotic behavioural and/or emotional disorders. Section 2.3.2 below provides a definition and further discussion of the term psychological distress.

Table 2.2 ICD-10 and DSM-IV as Multiaxial Systems of Classification

The Multiaxial System of ICD-10	The Multiaxial System of DSM-IV
<p>AXIS I: Clinical syndromes (psychiatric disorders including personality disorders and somatic diseases).</p> <p>AXIS II: Disabilities.</p> <p>AXIS III: Environmental/circumstantial and personal life-style/life management factors.</p>	<p>AXIS I: Clinical syndromes and other conditions that may be a focus of clinical attention.</p> <p>AXIS II: Personality disorders and mental retardation.</p> <p>AXIS III: Physical disorder or general medical conditions present in addition to mental disorder.</p> <p>AXIS IV: Psychosocial and environmental problems</p> <p>AXIS V: Global assessment of functioning.</p>

DSM-IV is the most widely used diagnostic classification system in research, whereas ICD-10 is more widely used clinically. A major limitation of these classification systems is that they are not practical to use as screening measures in the general population. Although diagnostic tools allow for precise estimates of a specific mental disorder, such measures can be time consuming and not cost effective. Furthermore, it will become apparent through the course of this review that not all of the studies used diagnostic outcome measures. For this reason, mental health outcomes are collectively referred to as measures of

psychological distress. Section 2.3.2 below provides a definition and further discussion of the term psychological distress.

2.3.1 Assessment Approaches Used to Measure Mental Health

Standardised measures used to assess mental health in children and adolescents generally fall into one of several categories. These include: caregiver and/or teacher checklists, child/adolescent self report or child diagnostic interviews.

Diagnostic Interviews are often classified according to their degree of structure and can either be structured or semi-structured. Angold *et al.*, 1995 suggest that structured diagnostic interviews should achieve the following goals:

- Structure information coverage so that interviewers will have collected all relevant information
- Define the ways in which relevant information is to be collected
- Make a diagnosis only after all relevant confirmatory and disconfirmatory information has been collected
- Structure the process by which relevant confirmatory and disconfirmatory information is combined to produce a final diagnosis.

Angold *et al.*, 1995 suggest that defining how information is to be collected can either be interviewer based or respondent based. Respondent based interviews are often highly structured, whereas, interviewer based interviews are semi-structured. Choice of the type of interview (semi-structured versus structured) depends on factors such as the topic(s) of assessment, financial considerations, how the information from the information will be analysed.

Self completed checklists or checklists completed by caregivers and/or teachers may provide a practical alternative to diagnostic interviews whilst assessing the prevalence of mental health problems in the community. Furthermore, research in psychiatric epidemiology has used information from multiple informants whilst

measuring child and adolescent mental health. For example, Goodman *et al.*, 2000 used the Strengths and Difficulties as a potential means for detecting psychiatric disorders in the community. These authors collected scores from multiple-informants (parents, teachers and older children) and compared the scores from multiple informants with independent psychiatric assessments. The results showed that multi-informant sources identified individuals with a psychiatric diagnosis with a specificity of 94.6%. Specificity is the proportion of true negative results where the denominator is the sum of the numbers of true negative plus false positive results. The use of screening questionnaires, such as the Strengths and Difficulties Questionnaire, are useful tools for estimating the prevalence of mental health problems in the community.

It will become apparent that mental health measures in the studies selected for review vary widely and for the purpose of this review, mental health measures are collectively referred to as measures of psychological distress.

2.3.2 Mental Health Problems: Defining Psychological Distress

Research involving measures of psychological distress has generally investigated non-psychotic emotional and behavioural difficulties (as opposed to psychotic symptoms). Behavioural difficulties can include symptoms of hyperactivity, conduct disorder or peer relationship problems. On the other hand, emotional difficulties can include symptoms of depression or anxiety. Psychological distress is a term frequently used in health care literature, though the term is seldom defined. Ridner (2004) proposes that psychological distress refers to 'the unique discomforting, emotional state experienced by an individual in response to a specific stressor or demand that results in harm, either temporary or permanent, to the person'. To my knowledge, Ridner's definition of psychological distress remains the single definition of psychological distress to date, yet measurement of psychological distress in this thesis needs to be more specific with regards to mental health outcomes.

The comparability of research findings using psychological distress as an outcome can be problematic due to the variety of diverse measures used to capture qualitatively different symptoms. One should, however, have clarity with regards to the scope and limitations of the construct used to measure psychological distress. For the purpose of this thesis, psychological distress is conceptualised as a global measure of non-psychotic emotional and behavioural conduct disorders.

With regards to measures of psychological distress, some researchers have criticised the use of dichotomous measures of psychological distress (e.g. Mirowsky and Ross, 2002) as it is argued that categorical indicators do not represent dimensions of psychological distress based on a continuum. However, the purpose of the measure of psychological distress in this thesis is to identify adolescents with general symptoms of psychological distress.

2.4 Background Information:

2.4.1 The Prevalence of Child and Adolescent Psychological Distress in the UK

This section discusses key findings regarding the prevalence of psychological distress amongst children and adolescents from the UK. Much of the literature in this field has not met the inclusion criteria to be included in the literature review of this chapter.

The 1999 British Child and Adolescent Mental Health Survey (Meltzer *et al.*, 1999) investigated prevalence rates of conduct disorders, emotional disorders and hyperkinetic disorders amongst over 10,000 children and adolescents aged between 5-15 years of age in Britain. This was the first major survey to measure the prevalence of mental disorders amongst children and adolescents in Great Britain. Diagnostic instruments as well as screening measures were administered to assess mental disorder. The overall prevalence for mental disorders assessed by using the Developmental and Well-Being Assessment (DAWBA; Goodman *et al.*, 200b) was 9.5%. Figure 2.1 below displays the prevalence of mental disorders (emotional, conduct or hyperkinetic disorders)

for 11-15 year olds by gender. The authors of this study state that interpreting ethnic differences in mental disorders in this study is difficult due to the small numbers in the sample that defined themselves as belonging to a particular ethnic group. When a similar survey was conducted in 2004 (see figure 2.2), similar rates of mental disorders were found in most ethnic groups, though adolescents defined as Black displayed an increase in the number of mental disorders compared with the sample surveyed in 1999.

Despite the small number of ethnic minority individuals, these surveys highlighted some interesting findings. A low rate of mental disorders amongst Indian adolescents compared with their White counterparts is worth taking note of. Disparities in mental disorders beg the following question: do the risk and protective factors that play a role in the development of mental disorders vary according to ethnicity? Though there could potentially be a vast number of factors that differ by these groups, this question forms the basic premise of this thesis.

The Health Survey for England 1999 (HSE 1999; Stanner, 2001) used improved categories to define different ethnic groups compare with the surveys described above. Figure 2.3 displays the prevalence of psychological distress measured by The Strengths and Difficulties Questionnaire for children aged 4-15 years of age (SDQ; Goodman 1997; 2001). The SDQ is an general measure of psychological distress and not a diagnostic tool, it is therefore not a surprise that there are elevated levels of psychological distress compared with rates of mental disorders described in the 1999 and 2004 Surveys' described above. The HSE 1999 contained a boost sample of ethnic minorities groups. A contradictory finding from the HSE, 1999 compared with the national surveys described above, concerns the high levels of psychological distress amongst South Asian minority groups compared with the general population. This finding could possibly be explained by the different measures used between the studies. However, there is a clear difference between the rates of psychological distress according to ethnicity in these studies. So far there has been no discussion regarding the underlying causes as to why ethnic variations in psychological distress are apparent in the literature. The following section of this

chapter attempts to address this issue in a systematic manner. Firstly, the relevant literature in the field is identified and a critical review of the research is provided.

Figure 2.1 Prevalence of Mental Disorders in The 1999 British Child and Adolescent Mental Health Survey (Meltzer et al., 1999)

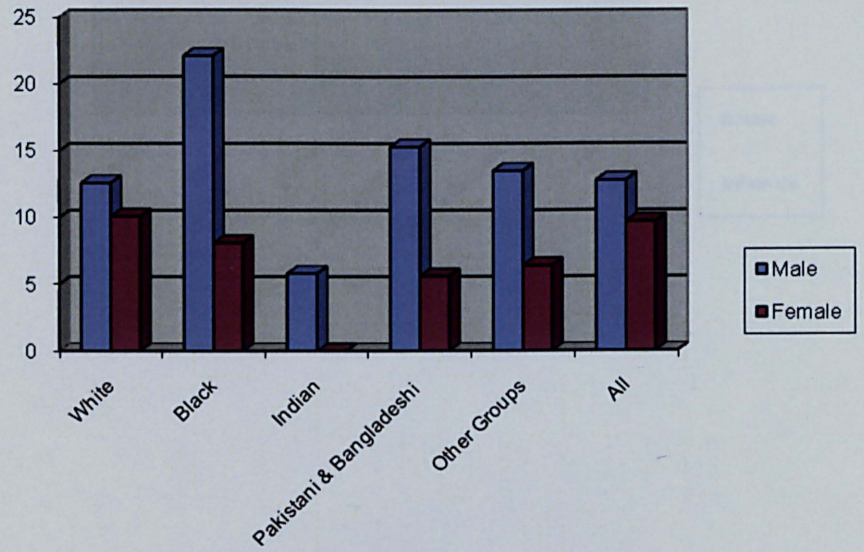
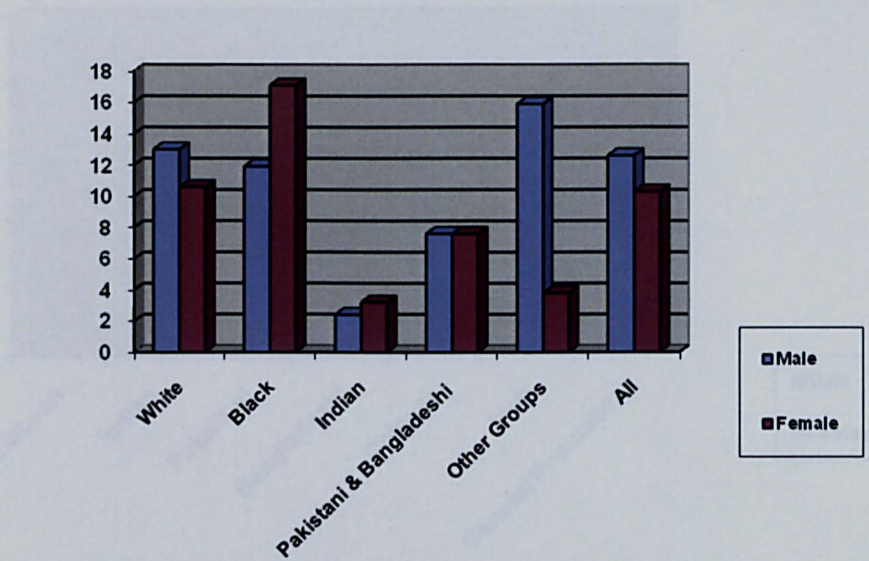


Figure 2.2 Prevalence of Mental Disorders in The 2004 British Child and Adolescent Mental Health Survey (Green et al., 2005)



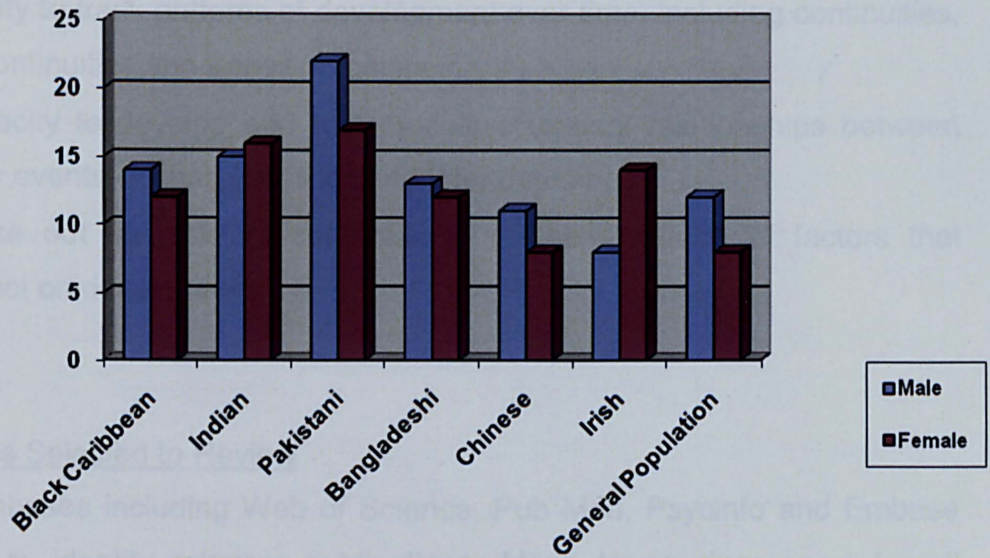
2.5 The Literature Search

2.5.1 Synopsis of the Literature Search

A systematic search strategy is used in order to identify relevant literature in the field and details of this process are provided. Appropriate information from the identified literature is extracted and collated to illustrate key findings that form the basis of the current review. A number of studies that address the subject of interest are reviewed using selected criteria. Prospective longitudinal studies involving adolescent samples form the basis of the selection criteria. The outcomes of interest for each study include standardized measures of mental health status, psychiatric symptoms and psychosocial functioning.

Inclusion criteria used for this review were studies employing a prospective longitudinal cohort design in an adolescent community sample. According to

Figure 2.3 Prevalence of Psychological Distress in the Health Survey for England 1999 (Stanner, 2001)



2.5 The Literature Search

2.5.1 Synopsis of the Literature Search

A systematic search strategy is used in order to identify relevant literature in the field and details of this process are provided. Appropriate information from the studies has been extracted and tabulated to illustrate key findings that form the basis of the current review. A number of studies that address the subject of interest are reviewed using selected criteria. Prospective longitudinal studies involving adolescent samples form the basis of the selection criteria. The outcomes of interest for each study include standardised measures of mental health status, psychiatric symptoms and psychosocial functioning.

Inclusion criteria used for this review were studies employing a prospective longitudinal cohort design in an adolescent community sample. According to

Farrington (1991) and Rutter (1994), advantages to longitudinal approaches over other research designs include:

- Ability to track patterns of development over time, including continuities, discontinuities and transition points
- Capacity to develop and test models of causal relationships between early events or characteristics and later outcomes
- Tease out the relative contributions of the multitude of factors that impact on development.

2.5.2 Articles Selected to Review

Search databases including Web of Science, Pub Med, Psycinfo and Embase were used to identify relevant publications. Mesh terms were used for all keywords. Searches were limited to adolescent populations only. The following search terms were used as follows in each database:

Search 1: Mental Health AND Ethnicity

Search 2: Mental Health AND Cohort

Search 3: Mental Health AND Longitudinal

Search 3: Mental Health AND Social Support

Search 4: Mental Health AND Acculturation

Search 5: Acculturation AND Social Support

Search 6: Acculturation AND Longitudinal

Publication lists for specific longitudinal cohort studies were also available on the World Wide Web. Furthermore, the following journals were hand searched for relevant publications:

-Ethnicity and Health 1996-

-Archives of General Psychiatry 1994-

-Journal of the American Academy of Child & Adolescent Psychiatry 1995-

2.5.3 Study Characteristics

Table 2.3 provides a summary of the studies that met inclusion criteria and were included in the literature review. Details of the study, sample, ethnic groups involved and measures of cultural identity, social support and mental health are provided where appropriate for the twelve studies that were found to be relevant to the current review. From the eleven longitudinal cohort studies identified, twenty-six publications were reviewed. Details of each publication, study aims and findings pertinent to the current review are summarised in Appendix 1.

The publications selected from the eleven longitudinal cohort studies fulfilled at least one of the following criteria: (i) a measure of social support or a proxy measure of support used in the study, (ii) the sample included adolescents from an ethnic minority background, (iii) a measure of acculturative style used in the study.

The most common longitudinal study design is the single-cohort design. Additional designs included in articles reviewed are cross-lagged, cross-sequential and single-cohort, multiple-age designs. Various strengths and weaknesses are associated with each of the longitudinal study designs. For example, a single-cohort design has the limitation of producing long-term outcomes at relatively slow time lags. For the purposes of the current review, selection criteria include all designs within prospective longitudinal studies. Birth cohort studies that followed the sample through to adolescence were also included.

The prospective longitudinal design of studies included in this review reflects quality of study design. The eleven studies included in this review ranged considerably with respect to their geographical location in which the study took place, the sample characteristics and the measures used in each study.

With regards to mental health measures from the eleven studies, every study except for the Add Health study included multiple measures of both diagnostic and non-diagnostic mental health. This is clearly a strength with regards to the range of mental health measures and symptoms collected between the eleven

studies. On the other hand, one needs to be cautious whilst drawing comparisons across studies that use different mental health measures. This review attempts to draw upon findings from the eleven studies displayed in Table 2.3 whilst investigating the following issue: how have ethnic variations in psychological distress been accounted for? Whilst attempting to address this issue, it will become apparent throughout course of this chapter that some studies have not adequately addressed this issue. Furthermore, measures used in some studies to capture constructs such as ethnicity have not been adequately measured or analysed.

Table 2.3 A Summary of Prospective Longitudinal Cohort Studies

Study	Initial Sample size & Follow-up rate at most recent Follow-up.	Ethnic Background of Sample	Cultural Identity or Cultural Affiliation Measure	Age at Assessment and Year of Baseline Assessment	Social Support or Related Measure	Mental Health Measure
The Dunedin Multidisciplinary Health and Development Study	1037 96% retention	Non White 94 (9.6%)	Not measured	Birth (1972 – 1973) 3 Two year intervals until 15 18 21 26 32 Ongoing	Inventory of Peer and Parent Attachment (Armsden and Greenberg, 1987) Forced Choice Measure of Adult Attachment (Hazan and Shaver, 1987)	Diagnostic Interview Schedule for Children (DISC; Costello <i>et al.</i> , 1982) 30 item Delinquency Scale (Moffit and Silva, 1988) Denver Youth Survey Interview Schedule (Huizinger, 1989) Conduct Disorder measured according to DSM-IV criteria
Christchurch Health and Development Study	1265 Multi-informant 80% retention	Self-reported ethnicity measured when participants were 21 years of age White 85.4% New Zealand	Not measured	Birth (1977) 4 months 1 year Annual intervals to age 16 18 21 25	Inventory of Peer and Parent Attachment (Armsden and Greenberg, 1987)	Authors measures of suicidal behaviour DISC (Costello <i>et al.</i> , 1982) Items from Composite International Diagnostic Interview (CIDI; World Health Organisation, 1993) used to assess DSM-IV criteria for

		Maori 12.2% Pacific Island 2.2% Asian 0.2%		Ongoing		depression and anxiety disorders
Australian Temperament Project	2443 Multi-informant ~66% retention	12% of the sample classified as British (British, New Zealand and Irish) 11% of the sample classified as Mediterranean (Italian, Greek, Yugoslavian and Lebanese) 2% from US, Africa, Northern and Southern Europe and the Asian sub-continent All participants born in Australia	Not measured	Birth (1982 – 1983) 18-24 months 32-36 months 3-4 years and two year intervals until 11-12 years and then 12-13 13-14 15-16 17-18	Peer Scale from the Walker-McConnell Scale of Social Competence and School Adjustment (Walker and McConnell, 1988) completed by mothers and teachers. The Peer and Parent Relationships self-concept scales from the Self-Description Questionnaire (Marsh <i>et al.</i> , 1984) completed by children Friendship Questionnaire (Berndt and Perry, 1986)	CBQ (Rutter <i>et al.</i> , 1970) – Scales A and B (Parent and Teacher) with 4 items adapted from DSM-III0R for depression Authors developed self-screening adapted from CBQ-A Child Assessment Schedule (Hodges, 1986)

<p>The Simmons Longitudinal Study</p>	<p>763 Multi-informant</p> <p>Retention Rate not available</p>	<p>Predominantly White</p>	<p>Not measured</p>	<p>Ages 5 (1977)</p> <p>6</p> <p>9</p> <p>15</p> <p>18</p> <p>21</p> <p>26</p>	<p>Arizona Social Support Interview Schedule (Barrera, 1980)</p>	<p>DSM-III-R diagnoses of major depression and drug abuse/dependence (American Psychiatric Association, 1987) assessed by the Diagnostic Interview Schedule, version III – revised (Robins <i>et al.</i>, 1989)</p> <p>Children's Depression Inventory Kovacs, 1983)</p> <p>Simmons Behaviour Checklist (Reinherz and Gracey, 1983)</p> <p>Child Behaviour Checklist (Achenbach, 1991a)</p> <p>Youth Self-Report (Achenbach, 1991b)</p> <p>Anti-social behaviour measured by items from the Diagnostic Interview Schedule for Children (Costello <i>et al.</i>, 1984)</p>
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<p>The Great Smoky Mountains Study</p>	<p>>1000 Multi-informant</p> <p>Retention Rate not available</p>	<p>933 White</p> <p>323 (25%) American Indian</p> <p>82 (8.1%) African American (not included in analyses)</p>	<p>Ethnicity used as Proxy cultural identity</p>	<p>Phase I (1992) – 9, 11, 13 year olds</p> <p>Phase II – 10, 12, 14 year olds</p> <p>Phase III – 11, 13, 15 year olds</p> <p>Phase IV – 12, 14, 16 year olds</p> <p>Phase V – 15 year olds</p> <p>Phase VI – 14 year olds</p> <p>Phase VII – 15 year olds</p> <p>Phase VIII - 16 year olds</p>	<p>Not measured</p>	<p>Moods and Feelings Questionnaire (Angold <i>et al.</i>, 1987)</p> <p>The Child and Adolescent Psychiatric Assessment (Angold <i>et al.</i>, 1995)</p>
<p>Native Mental Health Research Development Program</p>	<p>>7000</p> <p>Retention rate not available</p>	<p>Majority Native Hawaiian</p> <p>~60% 'Full or part' Hawaiian</p> <p>~40% Non-Hawaiian</p>	<p>Hawaiian Culture Scale Adolescent Version</p> <p>Likert scale to measure</p>	<p>Age of assessment not available from publications. Study commenced in 1990.</p>	<p>Perceived Social Support From Family and Friends (Procidano and Heller, 1983)</p> <p>Questions regarding help-seeking adapted from Roberts <i>et al.</i>, 1991 study</p>	<p>CES-D (Radloff, 1977)</p> <p>Diagnostic Interview Schedule for Children (Shaffer <i>et al.</i>, 1996)</p> <p>Spielberger State Trait Anxiety Inventory (Loo and Rapport, 1998)</p>

		(Japanese, Mixed, Filipino, Caucasian, African, Chinese, Korean and Samoan)	7 factors of cultural orientation: activities and social events; customs and beliefs; lifestyles; folklore and legends; causes/locations; causes/access; language.		of adolescents	Braver Aggression Detection Scale (Office of Hawaiian Affairs, 1998) Substance Abuse Subtle Screening Inventory-Abbreviated (Miller, 1985)
The Oregon Adolescent Depression Project	1710 85% retention	Primarily White (91% White Caucasian)	Not measured	Phase I (1987-1991) – 14-18 years Phase II – 15-19 years Phase III – 24 years (included participants with a history of psychiatric disorder at Phase II only)	Family Social Support measured using Conflict Behaviour Questionnaire (11 items; Prinz <i>et al.</i> , 1979), the Parent Attitude Research Instrument (6 items; Schaefer, 1965), the Cohesion subscale of the Family Environment Scale (3 items; Moos, 1974), the Competence scale of the Youth Self-Report (2 items; Achenbach & Edelbrock, 1987), and an adaptation of the Arizona Social Support Interview Schedule (SSIS; Barrera, 1986) Friends social support	20 item CES-D (Radloff, 1977) 21 item Beck Depression Inventory (Beck <i>et al.</i> , 1961) interviewer-rated 14 item Hamilton Depression Rating Scale (Hamilton, 1960) (Author's) single item assessing depression level during the past week Tendency to worry – 5 items Maudsley Obsessional Compulsive Inventory (Hodgson and Rachman, 1977) Hypomanic behaviour – 12 items

					<p>measured using the Social Competence Scale (2 items; Harter, 1982), the University of California, Los Angeles, Loneliness Scale (8 items; Russell <i>et al.</i>, 1980), the Competence Scale of the Youth Self-Report (3 items), and number of friends listed as providing social support from the ASSIS</p>	<p>General Behaviour Inventory (Depue <i>et al.</i>, 1981)</p> <p>State Anxiety – 10 items State-Trait Anxiety Inventory (Spielberger <i>et al.</i>, 1970)</p> <p>(Author's) quantity and nature of sleep – 8 items</p> <p>Hypochondriasis – 8 items (Pilowsky, 1967)</p> <p>Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS) symptoms for attention-deficit hyperactivity (15 items), conduct (17 items) and oppositional disorders (11 items)</p> <p>Unpublished scale assessing conduct problems (6 items)</p>
<p>The National Longitudinal Study of Adolescent Health (Add Health)</p>	<p>20 724</p> <p>73% retention</p>	<p>White 10455 (50.5%)</p> <p>Hispanic 3525 (17.0%)</p> <p>Black 4669 (22.5%)</p> <p>Asian 1467 (7.1%)</p> <p>Native American 382 (1.8%)</p> <p>Other 226</p>	<p>Not measured</p>	<p>Phase I (1994 – 1995) – 12-18 years</p> <p>Phase II – 13-19 years</p> <p>Phase III – 18-26 years</p>	<p>Family Satisfaction (how much family understood adolescent, family fun and attention from family)</p> <p>Friend care</p> <p>Teachers care</p> <p>Maternal activities</p> <p>Paternal activities</p> <p>Peer support</p>	<p>Center for Epidemiologic Studies-Depression Scale (Radloff, 1977)</p>

		(1.1%)			Parent support	
The National Survey of Mental Health and Well-being: child and adolescent component	4509 Multi-informant 4 – 17 yr olds. Retention rate not available	Included a very small proportion of Aboriginal and Torres Strait Islander communities.	Not measured	Age of Assessment and year that the study commenced not available.		DISC IV (for parents) Center for Epidemiologic Studies-Depression Scale (Radloff, 1977) Child Behaviour Checklist completed by parents (Achenbach, 1991a) Youth Self-Report (Achenbach, 1991b) Youth Risk Behaviour Questionnaire (Brenner et al., 1995).
The Victorian Adolescent Health Cohort Study	2032 14-15 yr olds. 75% retention	Primarily White	Not measured	Age of assessment not available from publications. Study commenced in 1992.	Parental Bonding Instrument (Parker, 1979)	Revised Clinical Interview Schedule (Lewis and Pelosi, 1992) Composite International Diagnostic Interview to diagnose affective disorder (Robins <i>et al.</i> , 1988).
The Determinants of Adolescent Social well-being and Health Study	6643 72% retention	White UK 1236 Black Caribbean 946 Black African 1107 Indian 493 Pakistani & Bangladeshi	Ethnic mix of friends Use of English Religious Affiliation	Phase I (2003) – 11-13 years Phase II – 13-16 years.	Multidimensional Scale of Perceived Social Support (Zimet et al., 1988) included in Phase II of the Study.	Strengths and Difficulties Questionnaire (Goodman, 1997) Short Moods and Feelings Questionnaire (Child Version) (Angold et al., 1987) included in Phase II of the Study.

			631 Mixed 568 White Other 725 Other 928	Generation al Status			
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2.6 Reviewing the Findings from the Literature

2.6.1 Ethnic Variations in Psychological Distress

Ethnicity has been considered an important variable as a basis to investigate group differences in psychological distress (Prescott *et al.*, 1998, Nazroo, 1997; Kuo, 1998; Bhugra *et al.*, 1997; Bhui, 1999). The mental health impact of migration and second-generation immigrants has also been the subject of research interest (Odegaard, 1932; Alati *et al.*, 2003; Bledin, 2003; Bhugra and Mastrogianni, 2004). Oppedal and Roysamb (2004) recognise that much of the empirical research assumes that ethnic minority groups are at greater risk of psychological distress than the indigenous population. However, empirical research involving migrants or second-generation migrants in the minority has provided conflicting findings (Roberts *et al.*, 1997). Findings from the selected review papers are summarised with reference to ethnic variations in psychological distress. Empirical research in the field is also drawn upon and explanations for apparent variations in ethnic mental health follow.

The Great Smoky Mountains Study (Costello, 1997) provided interesting findings with regards to the comparison of rates for psychiatric disorders in American Indian youths to White youths. The Great Smoky Mountains Study was a longitudinal population-based community survey of 1,073 children aged 9 through 16 and their parents, from 11 counties in western North Carolina. Baseline measures of family risk and protective factors revealed that American Indian adolescents displayed much higher rates of family deviance (parental history of substance abuse, arrest and violence to spouse or children) and family adversity and poverty than the White adolescents did.

Previous research has found an association between the risk factors of poverty and family deviance, with psychological distress (e.g. Spence *et al.*, 2002) and associations of these factors with overall prevalence of psychiatric disorders in the Great Smoky Mountains Study were significant for the White community but not the American Indians. Furthermore, the American Indian children displayed a lower overall prevalence of psychiatric disorders than the White sample

(16.7% vs. 19.%; odds ratio = 0.9, 0.6-1.2). The only diagnosis occurring more frequently in American Indian children was substance abuse (odds ratio = 11.7, 2.1-65.2), which could suggest that there is a difference in the expression of disorder depending on ethnicity. Psychiatric symptomatology was measured using the Center for Epidemiologic Studies-Depression (CES-D; Radloff, 1977); Spielberger State-Trait Anxiety Inventory (Loo and Rapport, 1998); Braver Aggression Detection Scale (Office of Hawaiian Affairs, 1998) and the Substance Abuse Subtle Screening Inventory-Abbreviated (Miller, 1985).

Stansfeld *et al.*, (2004) investigated rates of psychological distress in 2790 adolescents in Research with East London Adolescents: Community Health Survey (RELACHS). Over three-quarters of the adolescents from the study were non-White and the three largest ethnic groups were Bangladeshi (25%), White UK (21%) and Black (20%). The authors found that all ethnic groups were socially disadvantaged compared with UK national average rates and the Bangladeshi group were particularly disadvantaged. However, rates of psychological distress, measured by the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997; Goodman *et al.*, 1998), were significantly lower for Bangladeshi adolescents (odds ratio = 0.63, CI = 0.4, 0.9) and significantly higher for depressive symptoms for non UK-White adolescents on the Short Moods and Feelings Questionnaire (Angold *et al.*, 1987, Angold *et al.*, 1995) (odds ratio = 1.54, CI = 1.1, 2.2) compared to UK-born White adolescents.

The Native Hawaiian Mental Health Research Development Program (Andrade *et al.*, 1994) sample comprised of sixty per cent Hawaiian or part Hawaiian and forty per cent of Non-Hawaiian origin (Japanese, Mixed, Filipino, Caucasian, African, Chinese, Korean and Samoan). As mentioned previously, The Native Hawaiian Mental Health Research Development Program is the only study selected for review that does not have a primarily white sample. It is therefore interesting to investigate comparative rates of psychiatric symptomatology and adversity in minority and indigenous populations from the study. Goebert *et al.*

(2000) hypothesized those adolescents reporting high levels of family adversity would also report the greatest levels of psychiatric symptomatology. Furthermore, the authors expected this effect to be stronger among Hawaiian adolescents compared with non-Hawaiian adolescents.

Reminiscent of Costello *et al.* 1997 and Stansfeld *et al.* 2004 findings, Goebert *et al.* (2000) also found a difference in psychiatric symptomatology between ethnic groups. Although there were no significant differences between the ethnic groups for depression or anxiety, Hawaiians were significantly more likely to report externalising symptoms than non-Hawaiians, where Hawaiians reported more substance abuse (odds ratio = 1.54, CI = 1.11, 2.13) and aggression (odds ratio = 1.35, CI = 1.00, 1.82).

It should be noted however, findings of ethnic variations in psychological distress were based on cross-sectional reports from The Great Smoky Mountains Study (Costello, 1997), Research with East London Adolescents: Community Health Survey (Stansfeld *et al.*, 2004) and The Native Hawaiian Mental Health Research Development Program (Andrade *et al.*, 1994). Although studies using a longitudinal cohort design were selected for the current review, these studies reported findings from the initial wave of data collection. It is therefore not possible to appreciate the level of continuity or change in ethnic variations in psychological distress within the same sample. Furthermore, findings from the initial phase of data collection from The Great Smoky Mountains Study and Research with East London Adolescents: Community Health Survey were based on children aged 9 to 14 years of age and it would therefore be interesting to investigate ethnic variations in psychological distress during later adolescence.

In summary however, there are marked differences in psychological distress between ethnic groups and the indigenous population. Although minority groups

of interest have experienced socio-economic adversity, overall psychiatric symptomatology has frequently been reported as lower for minority groups. In the following section of the review, research findings from the articles selected for the review and empirical research in the field are drawn upon in order to provide an explanation as to why ethnic variations in psychological distress are apparent.

2.7 Understanding differences in psychological distress between ethnic groups

It is concerning that rates of psychological distress from The Great Smoky Mountains Study have been interpreted with reference to ethnic background only. Although the authors from The Great Smoky Mountains Study suggest that an American Indian way of life may operate particular protective characteristics upon adolescents, variables associated with culture were not measured in the study. Bhui *et al.* (2005) recognise that the use of 'ethnic or racial group as a proxy for culture cannot unpack cultural influences in as precise a way as among newly migrant populations'. Differences within a particular ethnic group may include length of residence, source country and religious beliefs to name a few (Anderson, 1999). It may therefore be worthwhile to investigate potential confounding variables associated with ethnicity and psychological distress to appreciate why variations occur in psychological distress.

Empirical research has focussed upon three broad topics of investigation whilst attempting to explain ethnic differences in psychological distress. These areas include investigating whether (a) processes associated with migration affect mental health; (b) pathways to mental health services vary by ethnicity and pinpointing explanations as to why these pathways vary; (c) socio-economic status is a potential confounding factor in the association between ethnicity and psychological distress. A brief discussion of research conducted on migration and mental health and pathways to mental health services are discussed in this

section with reference to wider literature that has not been included in this literature review. Ethnic disparities in socio-economic status and psychological distress in the papers included in this literature review are discussed in the following section of this chapter.

In 1932, Odegaard found elevated rates of schizophrenia amongst Norwegian migrants in the United States. Since this landmark study, researchers have attempted to understand the migratory process. Berry (2001, pg. 615) states:

'The study of immigrants and migration is rooted in many disciplines: Anthropology, demography, economics, political science, and sociology have all predominated, whereas psychology has lagged somewhat behind.'

Berry (1990, 1999, 2001) focuses upon the psychological component of immigration. The process of *acculturation* and the impact of immigration upon the cultural groups involved during migration. The acculturative process as an explanatory factor for ethnic variations in psychological distress are touched upon at a later stage in this chapter, Changes occurring during these stages can vary from family and social relations, language and social norms and status. Furthermore, these factors are not static. They are subject to change and the migratory experience is both complex and specific to an individual.

Bhugra (2004) conducted a review of how migration influences mental health and whether migration is a factor that affects help seeking and pathways to care. In Bhugra's review, four stages of migration were identified as potential stages in which individuals migrating are likely to experience stressors and changes. These stages are named: premigration, initial stage, middle stage and final stage. For example, further understanding of factors taking place during the premigration stage could provide an insight into why Odegaard (1932) found elevated levels of schizophrenia amongst Norwegian migrants. Could it be the case, put forward in the 'selective migration' hypothesis, that individuals vulnerable to psychological distress or mental ill health are more likely to migrate as they feel restless and rootless? This interesting hypothesis has not been supported by research conducted by Bhugra (1997) who found high levels

of schizophrenia amongst second generation Asian females compared to their first generation counterparts. Another area for explanation may involve examining original rates of schizophrenia in the country of origin of the migrant.

None of the studies selected in this review included information on whether the sample were migrants or not. It may be the case that the studies that included a sizeable proportion of ethnic minorities were largely conducted upon second generation ethnic minorities. It is difficult to ascertain a) the proportion of first versus second generation migrants within each ethnic group and b) whether generation status had an association with levels of psychological distress. The key point however, is to consider the potential effects that migration may have upon an individual's psychological distress and it is essential to take this into account for the methodology of the thesis. It is necessary to record information regarding generation status and consider generation status as a potential factor that can affect psychological distress,

Along with its associated stressors, once migration has taken place, diagnoses and pathways to care have received substantial attention amongst researchers and have sometimes been the source of controversy. A study conducted by Harrison *et al.*, (1988) found increased incidence of schizophrenia amongst second generation migrants from the West Indies to England. As this study was based mainly on second generation migrants, some researchers have raised the issue as to whether racism plays a role in elevated rates of psychotic disorders amongst some Black Caribbean individuals (McKenzie & Sharpley, 2001). In a review of the evidence attempting to understand high levels of psychoses amongst the Black Caribbean population in the UK, McKenzie & Sharpley, (2001) noted that 'The pathway to psychiatric care of African Caribbean patients with schizophrenia in the UK involves an excess of police involvement, a low level of general practitioner involvement and a greater use of compulsory admission.

These findings should be interpreted along with the methods used to assess mental health. With regards to the impact that these findings have upon this thesis, as far as it is possible, Chapter 3 of this thesis will highlight that

measures that are valid across all ethnic groups are at the heart of a sound methodology.

This section has drawn upon research that has not been included in the studies selected for review in this thesis. In an attempt to address the role of socio-economic status in ethnic variations in psychological distress, the following section draws upon both the wider literature (studies not included in the papers selected for review) and specifically upon the findings from the studies selected for review in this Chapter.

2.7.1 Socioeconomic Status (SES) and Psychological Distress: Lack of an Association in Minority Youth

The American Indian and Bangladeshi youth in the Great Smoky Mountains Study and The RELACHS Study respectively reported lower levels of psychological distress despite reporting adversity measured by various socio-economic indicators. How can these findings be interpreted? Costello *et al.* (1997) propose that one explanation for their findings may be that American Indian youths reported significantly lower rates of parental mental illness and therefore the White youths in this study may be more likely to be predisposed to illness in comparison to the American Indian Youth. The authors also suggest the possibility that an American Indian way of life may operate particular protective characteristics upon adolescents. Yet, one should remain circumspect about the authors' suggestion given the lack of measurement of levels of social support or other potentially protective factors in the adolescents in The Great Smoky Mountains Study.

In an adult population, the relationship between socioeconomic status (SES) and psychological distress has generally reflected that individuals in the lower social strata have a greater number of mental disorders (e.g. Kessler *et al.*, 1994 and Dohrenwend *et al.*, 1992). This association, however, varies according to ethnicity (Nazroo, 1997). Measures of SES differ depending on whether they are proximal (a measure closer to a health outcome) or distal (a

measure more distant from a health outcome measure). According to Singh-Manoux *et al.*, 2002, proximal measures of SES discriminate better than distal measures of socioeconomic status as 'they portray the current and accumulated socio-economic circumstances of the individual more accurately'. Harper *et al.*, 2002 has found evidence to suggest that childhood SES conditions are associated with adult mental health. Furthermore, findings from the 1958 British Birth Cohort suggest that adult SES mediates the pathway between childhood SES and adult health (Power and Matthews, 1997).

Research investigating the causal relationship between SES and mental health has fallen under two schools of thought. The 'Selection hypothesis' argues that pre-existing conditions result in the drift of individuals into poor socioeconomic circumstances. This means that the presence of a mental disorder will prevent an individual from maintaining their SES position. On the other hand, the social causation hypothesis suggests that those individuals in lower SES have fewer resources available to them and this in turn leads to adverse mental health.

There are conflicting findings regarding the association between measures of SES and psychological distress in the studies included in the literature review. The Dunedin Multidisciplinary Health and Development Study and the Christchurch Health and Development Study reported that mental disorders were more likely to be found amongst youth from lower SES. These findings persisted after adjustment for confounding variables. However, several of the studies did not present such a relationship. The Oregon Adolescent Depression Project (Lewinsohn *et al.*, 1995), the Australian Temperament Project (Prior *et al.*, 1999) and the National Survey of Mental Health and Well-being (Sawyer *et al.*, 2001) found no differences in socioeconomic status between individuals that displayed psychological disorders and those that did not.

Though there is evidence to suggest a robust association between SES and psychological distress amongst children (Leventhal & Brooks-Gunn, 2000) and adult populations (Andrade *et al.*, 2000), this association is not consistently found amongst an adolescent population in both the papers selected in this

literature review and the wider research evidence (West and Sweeting, 2004). How can the inconsistencies in the association between SES and psychological distress during adolescence be explained? West and Sweeting propose that a lack of association between SES and psychological distress can be explained by the fact that adolescents are in transition period between their parental social position and their own adult social position. An important aspect of this transition period is that social influences outside of the family and neighbourhood play an important part during adolescence. For example, the impact of peers potentially from a range of socio-economic backgrounds could have a 'levelling effect'.

An additional issue for consideration are the diverse measures used as indicators for SES. SES can be measured by multiple indicators including parental education level, maternal education level, parental occupational level and household overcrowding to name a few. Yet, some studies may use single indicators and others use multiple indicators. One could speculate that certain socioeconomic indicators vary in their impact and meaning according to ethnicity.

2.7.2 Source of Social Support as an Explanatory Variable for Ethnic Variations in Psychological Distress

Costello *et al.*, 1997 suggested the possibility that lower levels of psychological distress in American Indian youth may be explained by protective effects of social support. An important distinction between different sources of social support (i.e. support from the family vs. support from peer groups) and psychological distress is apparent from empirical research (Dean and Ensel, 1983; Kenny *et al.*, 2002) and the studies selected for review (Lewinsohn *et al.*, 1994; Frost *et al.*, 1999; Goebert *et al.*, 2000). There is strong evidence to suggest from the authors named above, that low levels of family social support is prospectively associated with psychological distress. The fact that these

studies highlight prospective associations between social support and onset of psychological distress is interesting; as these prospective associations limit the possibility that adolescents' experiencing depressive symptoms have a distorted perception of family social support. A finding from the DASH (Determinants of Adolescent Social well-being and Health) study that may corroborate the fact that that low levels of family social support are associated with psychological distress is that pupils in the DASH study that did not live with both biological parents reported higher levels of psychological distress compared with pupils who lived with both biological parents (Maynard *et al.*, 2007).

Additional factors that have been found to act as protective factors against depression are family cohesion and whether personal information was shared with family members or people outside the family. For example, Carbonell *et al.*, (2002) selected 102 participants from The Simmons Longitudinal Study that were identified as at risk for major depression between the ages of 18 and 26; 33 of these participants met criteria for major depression and 15 met criteria for resilience. The authors found significant differences for levels of family cohesion; close family relations and whether family members were exclusively relied on as confidants between the depressed and resilient groups. An unexpected finding, however, was that there was no difference in perceptions of availability of social support between depressed and resilient adolescents; although perceived availability of support does not always imply that support is provided when needed.

Bearing in mind, family social support, together with ethnic minority membership are thought to be protective against psychological distress, it is worth considering whether individuals from minority groups are more likely to have greater level of support from their family than the indigenous population. This notion is particularly attractive given the fact that research exists to suggest extended families may act as a protective factor for the well-being of young Asian people (Hackett and Hackett, 1993; Sonuga-Barke and Mistry, 2000). A

finding from The Native Hawaiian Mental Health Research Development Program supports this idea. Goebert *et al.*, 2000 investigated family adversity and social support on levels of psychiatric symptomatology in Hawaiian and non-Hawaiian adolescents. These authors found that Hawaiian adolescents experience significantly more family adversity than non-Hawaiians. Interestingly, the effect of adversity had a greater effect on Hawaiian adolescents who received less family support than Hawaiian adolescents who received higher levels of family support i.e. evidence for a buffering effect of family social support was apparent for Hawaiian adolescents. The authors claim that 'family and the extended family...are important and integral parts of the Hawaiian culture...the absence of this network and its associated support appears to have serious effects on Hawaiian adolescents'.

In a similar vein, Klineberg *et al.*, (2006) investigated whether social support varied with ethnicity and whether social support explains ethnic differences in prevalence of psychological distress in young people from the RELACHS study. Social support was assessed using the Multidimensional Scale of Perceived Social Support (Zimet *et al.*, 1988). Psychological distress was measured using the self-report version of the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997, Goodman, 1998) and The Short Moods and Feelings Questionnaire SMFQ, (Angold *et al.*, 1987, Angold *et al.*, 1995) was used as an indicator of depressive symptoms.

In accordance with previous work in the field, overall low social support was associated with an increased likelihood of psychological distress or depressive symptoms for the sample. More specifically, low support from the family increased the risk of psychological distress, and low support from friends or family increased the risk of depressive symptoms. Although social support and psychological distress varied by ethnicity, it is worthy of note that social support could not account for ethnic differences in mental health. For example, low rates of psychological distress were evident in male Bangladeshi adolescents, yet

higher rates of social support could not account for this relationship. Furthermore, Bangladeshi males were more likely to report lower levels of social support compared to other ethnic groups in the RELACHS study. Findings from the RELACHS Study do not correspond with research conducted by Goebert *et al.*, 2000.

There are numerous questions arising from the research publications included in the review. A major issue emerging from these findings concern the use measurement of social support. Social support is multi-faceted and can vary by the type of support provided (practical/instrumental vs. emotional support) and the methods used to assess support (availability, perception and received support). It is essential to specify the type and method of social support used in a study. It may be the case that family support is both practical/instrumental and emotional.

As mentioned previously, the studies included diverse samples differing from one another. Evidence suggesting there are protective effects of family social support in the Native Hawaiian Study may not necessarily imply that all minority groups per se benefit from high levels of family social support. Indeed, low levels of family support in cross-sectional findings for Bangladeshi pupils do not corroborate the assertion that non-indigenous individuals benefit from higher levels of social support. However, these findings raise the questions (a) *which* minority ethnic group(s) benefit from protective effects of social support, (b) whether particular minority group(s) benefit specifically from family social support as opposed to other sources of support.

An additional issue that requires consideration is whether social support has a direct or buffering effect on psychological distress. As mentioned previously, social support can operate by two means and work published by Goebert and her colleagues illustrates a buffering mechanism of family social support for

Native Hawaiian adolescents. On the other hand, Klineberg *et al.*, 2006 investigated whether social support had a direct effect on psychological distress. This difference in mechanisms could be one reason as to why social support did not account for the relationship between ethnicity and psychological distress in the RELACHS study.

Another question arising from this evidence is whether there is a gender specific effect of low levels of social support on psychological distress during adolescence. There is evidence to suggest a reversal in psychological distress from pre-adolescence to adolescence for males and females (McGee *et al.* 1992). Males tend to report a decrease in psychological distress from pre-adolescence to adolescence and females report a reverse of this. Yet, female adolescents tend to report higher levels of support from their friends and family compared with male adolescents (Slavin, 1991). None of the studies selected for this literature review investigated whether low levels of family support have adverse effects on female, but not male adolescents. It would be worth investigating this issue further.

A conceptual issue arising from the research involves the way in which social support has been investigated. The majority of research reviewed considers social support as a static concept, where the amount of social support at one particular time point is the only focus of investigation. Cross-sectional research in this field has illustrated that levels of social support fluctuate over the life course (e.g. Olsen *et al.*, 1991). However, only one publication investigated how changes in social support over time affect mental health. Cornwell (2003) investigated how changes in social support over time affect depressive symptoms in adolescents from the Add Health study. A shift in support sources from family support to a reliance on friends may be particularly evident during adolescence. However, there is little evidence investigating whether this shift in support sources is also evident within ethnic groups.

2.7.3 Understanding Acculturation Amongst Minority Groups

A construct that has received growing attention in the field of ethnicity and health is acculturative style. Acculturative style refers to direction and dimension of acculturation, which will be discussed further once a definition for acculturation has been provided. In this section of the review, the concept of acculturation is introduced and the role that acculturative style as an explanatory mechanism for ethnic variations in psychological distress is discussed with reference to the literature identified from the literature search. Firstly, definitions of acculturation are provided along with the impact that these definitions have upon the conceptual understanding of acculturation.

Definitions of acculturation have evolved since Gordon (1964) proposed that acculturation was a 'change of cultural patterns to those of the host society'. Gordon's perspective of acculturation is clearly unidirectional, where the minority group(s) relinquishes their own cultural patterns and adopts the patterns and norms according to their new host society. Warner and Srole (1945, pg. 285) suggest a more extreme view on the subject and describe ethnic groups in New Haven, Connecticut, as 'unlearning' their 'inferior' cultural traits in order to 'successfully learn the new way of life necessary for full acceptance' into the host society's way of life. Although Warner and Srole (1945) viewpoints reflect an extreme and ethnocentric perspective on the matter, they nevertheless assume that assimilation is the natural outcome amongst minority groups. There is no scope for the minority group to retain aspects of their culture and there is no discussion on the effect that migration has upon the host society in terms of cultural changes occurring within the host society.

The unidirectional perspective of acculturation has received criticisms since Gordon's definition of acculturation was put forward. Teske and Nelson (1974) consider acculturation to be bidirectional where two groups in contact with one another can influence each other. Furthermore they specify that assimilation is distinct from acculturation as assimilation involves the host group exerting

influence and change upon the migrant group. Similarly Sam and Berry (2006) highlight the reciprocal nature of acculturation. These authors suggest that acculturation entails 'mutual or reciprocal influences where in theory both groups influence each other'. Furthermore, from a practical stance, a unidirectional interpretation of acculturation does not fit with current trends in the UK's population of ethnic minorities. In the UK, the size of the minority ethnic population was 4.6 million in 2001 or 7.9 per cent of the total population of the United Kingdom. It can not be argued that the 7.9 per cent of minorities in the UK have adopted their cultural patterns to those in keeping with the host society. A more accommodating definition of acculturation has been defined by Redfield et al., 1936 as 'those phenomena which result when groups of individuals having different cultures come into continuous first/hand contact, with subsequent changes in the original culture patterns of either or both groups'. Berry also regards acculturation as a process that involves an orientation towards one's own ethnic group and other ethnic groups (Berry et al., 1989). The latter definition is perhaps more appropriate than that put forward by Redfield et al., 1936, as Berry definition acknowledges that acculturation can take place in more than two distinct groups. This is in keeping with recent trends reported by the Office of National Statistics that the UK has shown increasing levels of both inward and outward international migration resulting in, what some call, 'a multicultural Britain' (Pathik, 2008).

Berry (1980) considers both the direction of acculturation (discussed above) and the dimension of acculturation. For the dimension of acculturation, Berry suggests that change can take place according to the dimension of the maintenance or loss of the original culture. The second dimension involves participation in or adoption of aspects in the new culture. This process can result in one of possible four acculturation strategies: those who identify with the host culture only (assimilated); those who identify with their own culture only (separated); those who identify with neither culture (marginalised), and those who identify with both host and own culture (integrated).

2.7.4 Acculturative Style as an Explanatory Mechanism for Ethnic Variations in Psychological Distress

Acculturative style has been considered to have an impact on subsequent psychological functioning (Farver *et al.*, 2002; Pawiluk *et al.*, 1996; Mehta, 1998). From the studies included in the literature review, Table 2.3 illustrates that The Native Hawaiian Mental Health Research Development Program was the only study in the review to include a measure of cultural affiliation. Yuen *et al.* 2000 measured Hawaiian cultural affiliation for seven factors (see Table 2.1), using a Likert scale. An overall affiliation score represented the mean of the seven factor scores. Contrary to the authors' expectation, greater affiliation with Hawaiian culture significantly increased risk for attempted suicide in Hawaiian adolescents independent of ethnicity, SES and psychopathology. Yuen *et al.*, 2000 put forward that their findings might be due to 'increased cultural conflict and increased acculturative stress engendered by being in a Western environment'. The authors also suggest that additional research examining the structure and dynamics within Hawaiian families may provide a richer understanding of the effects of cultural affiliation on psychological well-being.

Empirical research suggests there are contradictory findings as to which acculturative style is the most adaptive in terms of the individual experiencing the least acculturative stress and behavioural problems. It has been suggested that integrated individuals experience the least acculturative stress, anxiety and psychological problems in comparison to those that display marginalised, separated or assimilated styles of acculturation (Berry *et al.*, 1998; Farver *et al.*, 2002; Sam and Berry, 1995). However, these findings do not coincide with findings from The Native Hawaiian Mental Health Research Development Program, where, strong native affiliation i.e. traditionalism predicted attempted suicide for native Hawaiian students. Hawaiian students in this study represented a heterogeneous group of individuals and it is difficult to ascertain how far Hawaiian pupils represent a single cultural group, let alone identify how far Hawaiian culture is influenced by external socio-cultural influences.

Salant and Lauderdale (2003) suggest that one explanation for the inconsistencies amongst research investigating the effects of acculturative style

upon psychological distress findings is due to the diversity in acculturation measures. It may also be necessary to investigate additional variables that influence the relationship between acculturative style and psychological distress. Bhui *et al.*, (2005) provide an insight into this relationship; these authors found that baseline analysis from the RELACHS study revealed that there was a higher risk of depression, measured by the MFQ (Angold *et al.*, 1987), among assimilated black Caribbean pupils and lower risk of depression among traditional and integrated Bangladeshi adolescents. Bhui *et al.*, (2005) suggest that this finding may reflect greater social support from culturally similar peers as a protective factor for psychological well-being. In a similar vein, lower rates of psychological distress in an adult population have been explained by culturally specific factors such as social cohesion (Nazroo, 1997; Berry, 1997; Sproston and Nazroo, 2002).

Both social support and cultural affiliation were found to affect levels of self-reported psychological distress from the studies reviewed. More specifically, low family social support was found to increase the likelihood of psychological distress and, contrary to expectation, greater affiliation with Hawaiian culture, posed a significant risk for attempted suicide in Hawaiian adolescents from The Native Hawaiian Mental Health Research Development Program. From the studies reviewed, acculturative style and social support have not been studied as predictive factors for psychological well-being within the same sample. Furthermore, it is worthwhile to consider additional culture associated variables, such a religious observance and migration status, which may act as potential confounders to the relationship under question. Although there are conflicting findings as to which acculturative style is beneficial to psychological well-being, measures of social support and culture related variables studied within the same sample may provide a richer understanding of risk and protective factors that affect psychological well-being.

2.8 Methodological Problems Emerging From the Findings

Numerous methodological weaknesses pose a threat to whether findings from the review studies are generalisable to other populations. Issues associated with methodological flaws are discussed below. The main issues emerging from the studies are: problems associated with longitudinal cohort designs; the study sample (with a particular focus on ethnic grouping); problems associated with measures.

2.8.1 Longitudinal Cohort Study related problems

Although longitudinal studies provide information on developmental pathways to psychological distress, limitations to this study design need to be acknowledged (Loeber and Farrington, 1994; Magnusson and Bergman, 1990; Nicholson *et al.*, 2002; Mennard, 1991). Longitudinal studies selected for the review have primarily included single-cohort studies and are relatively slow on producing results. Furthermore, it is impossible to investigate cohort effects in single-cohort studies. The Oregon Adolescent Depression Project (Lewinsohn *et al.*, 1993) used a single-cohort, multiple-age design. Although statistical analyses controlled for age, age effects were not reported. However, average age at wave I was 16.6 years (SD = 1.2), and therefore there was not a vast range in age within the study's sample.

A common problem associated with longitudinal studies is attrition. The retention rates across the studies selected differ, as shown in Table 2.3. In order to have greater statistical power, a larger sample size is required. However, Table 2.3 illustrates that some studies, such as The Great Smoky Mountains Study only had just over 1000 participants at the initial Phase of data collection.

Table 2.3 includes information on the age of participants in each study when assessments took place. It is worthy of note that the age of participants and the number of assessments varies between the studies. Longitudinal cohort studies

enable the researcher to identify psychosocial risk or protective factors for the development of an outcome measure. The longitudinal design also provides an opportunity to track continuities and discontinuities across time for a particular risk or protective factor. For example, Cornwell (2003) investigated changes in level of social support and the effects on adolescent depression using a sample of 11, 835 adolescents from the National Longitudinal Study of Adolescent Health. Cornwell (2003) found that the effect of support decrease on depression is stronger than support growth. The author highlights the need to appreciate social support as a dynamic process that changes over time.

2.8.2 Sample Issues and Ethnic Minority Groups

A key topic for discussion in the literature review concerns ethnic variations in psychological distress. However, it should be taken into consideration that the nature of ethnic groups in the studies may limit conclusions drawn from the research. Methodological concerns associated with ethnic minority groups include measurement of ethnic background and sample size of minority groups.

With the exception of The Native Hawaiian Health Mental Research Development Program and The Determinants of Adolescent Social well-being and Health Study, the studies selected for review included a primarily White sample. Five studies included a sizeable number of non-White participants. However, categorisation of ethnic groups in some studies remains questionable. For example, The Oregon Adolescent Depression Project (Lewinsohn *et al.*, 1993) reports that 8.9% of their sample are 'non-White', however, the authors do not explain further details concerning minority status and although minority groups may have been heterogeneous, participants were classed as 'White' or 'non-White' groups for statistical analysis.

2.8.3 Problems Associated with Mental Health Measures

Table 2.3 illustrates the variety of measures used. A diverse array of mental health measures were used to assess psychological distress and several of the studies used diagnostic measures to assess specific disorders. The DSM-III-R (American Psychiatric Association) was the set of diagnostic criteria most commonly used to detect criteria for a particular disorder. Additionally, a number of studies used non-diagnostic measures to focus on sub-threshold disorders (e.g. Fergusson *et al.*, 2005) or a measure of psychological distress to detect overall externalising or internalising behaviours.

As previously noted, it is difficult to make a direct comparison across research findings when a variety of measures have been used to assess a single outcome. Though a specific mental health outcome is not the focus for the current review, it is worth being aware of the specificity of risk factors and their association with a particular outcome measure. Lewinsohn *et al.* (1995) acknowledge the issue of comorbidity of disorder whilst investigating specific pathways of psychosocial risk. These authors examine variables specific to depression and substance abuse disorder and the occurrence of either disorder formed the basis for two separate groups for analyses. Individuals presenting comorbidity of disorders were not included in analyses; predictive factors specific to *either* depression or substance abuse were identified. The authors found a difference between variables specific to depression and variables specific to substance abuse disorder. Such a finding suggests apparent specificity of risk. Furthermore, examining predictive factors of the onset of a single disorder does not eliminate whether comorbidity occurs. The presence of comorbidity and developmental pathways associated with specific mental health problems are issues in need of consideration whilst interpreting literature measuring specific mental health outcomes.

2.9 Demographic Factors Associated with Psychological Distress

There are additional variables that may affect levels of psychological distress of individuals. It is beyond the scope of this review to provide an exhaustive description of all the factors associating with psychological distress.

Demographic factors such as socioeconomic status, gender and age of exposure to risk factors are discussed as potential variables that have been associated with psychological distress.

2.9.1 Gender Differences Emerging in Psychological Distress During Adolescence

Differences in the frequency of various demographic factors such as gender and ethnicity (Weisfeld, 1994; Hoffman *et al.*, 1994; Williams and Best, 1994) and levels of psychological distress (Raja *et al.*, 1992; Armsden and Greenberg, 1987) are apparent. Table 2.4 below displays gender differences for scores of psychological distress measured by the General Health Questionnaire (GHQ-12) and the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1994) from the Health Survey for England (Prescott-Clarke and Primatesta, 1998). These scores represent the percentage of young people who are defined as 'high scorers' on the measures. The GHQ-12 was administered to 13-24 year olds and the SDQ was administered to 4-15 year olds in this survey. It can be seen that females tend to score higher on the GHQ-12 compared with males, yet this is not the trend for 'high scorers' on the Total Deviance Score of the SDQ. Although the two measures were administered to two different cohorts and the ages of these samples differ, it is interesting to note differences emerging for two issues. Firstly, the reversal in sex differences in psychological distress from pre-adolescence to adolescence. This issue has been noted by McGee *et al.* (1992) who investigated the continuity of mental disorder at ages 11 and 15 in a sample from The Dunedin Multidisciplinary Health and Development Study. Assessment of symptomatology for DSM-III disorders found that at age 11, the ratio of boys to girls with any kind of disorder was 1.3:1; at age 15, the ratio for any kind of disorder for boys to girls was 0.7:1. As noted, the GHQ-12 and the SDQ were administered to two different age cohorts, yet the apparent interaction between age and gender predicting psychological distress are worth considering.

Table 2.4 Gender differences for scores of psychological distress measured by the General Health Questionnaire (GHQ-12) and the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1994) from the Health Survey for England (Prescott-Clarke and Primatesta, 1998).

Measure/Scale to Assess Psychological Distress (High Threshold Score for Each Scale)	Males (%)	Females (%)
GHQ12 (4+)	10	19
SDQ - Total Deviance Score (17-40)	12	8
SDQ - Emotional Symptoms Score (5-10)	11	13
SDQ - Conduct Problems Score (4-10)	17	12
SDQ - Hyperactivity Score (7-10)	17	8
SDQ - Peer Problems Score (4-10)	16	11
SDQ - Prosocial Behaviour Score (0-4)	6	2

A second observation that can be drawn from the findings displayed in Table 2.4 concern the finding that males are more likely to score highly on subscales of conduct problems, hyperactivity and peer problems and lower on the prosocial behaviour scores compared with females. On the other hand, females are more likely to be classed as high scorers on the emotional symptoms subscale of the SDQ. It could be the case that these differences reflect the finding that females are more likely to report higher levels of internalizing problems compared with males and that females are less likely to report higher levels of externalizing problems compared with males

Afifi (2007) relates gender differences in mental health to various influences including biomedical, psychosocial or epidemiological factors. With regards to the implications that gender differences in mental health have upon research findings, it is essential not only to consider the role of gender as a confounding factor, but also necessary to consider gender whilst attempting to understand the pathway leading to psychological distress during adolescence.

2.9.2 Age of Exposure to Risk Factor

Age of onset of psychiatric disorder is often related to the age at which exposure to risk factors occurred. Rutter's (1964 – 1974) landmark Isle of Wight

Studies consisted of a series of epidemiological studies to investigate educational achievement and psychiatric and physical disorders during childhood and adolescence. It highlighted further points of interest concerning the nature of the development of adolescent mental health problems.

At follow-up, Rutter (1976) found that 60% of the psychiatric disorders present at the age of 14 had developed during early adolescence. The remaining 40% had the condition present before the age of 10. The 'younger' and 'older' onset groups revealed differential patterns of behaviour with regards to risk, where those with younger onset of disease also had significant reading and arithmetical difficulties (at 10 years of age). On the other hand, the older onset group had reading and arithmetical skills at a similar level to that of the general population (at 10 years of age). Similarly, research demonstrates that experiencing depression during adolescence to the mid 20s poses substantial risk for recurrent depressive episodes in adulthood (Fombonne *et al.*, 2001; Lewinsohn *et al.*, 1999; Birmaher *et al.*, 1998; Weissman *et al.*, 1999). It is therefore important to consider the timing of data points in longitudinal research.

In summary, demographic factors should be taken into consideration whilst interpreting findings from the publications reviewed, yet the demographic variables mentioned have not yet discussed the role that socio-economic position can have upon well-being; this issue is touched upon in greater depth at a later stage in this chapter. Demographic factors may operate as potential confounding variables for the relationship between various psychosocial risk and protective factors to psychological distress. Numerous methodological issues need to be taken into consideration whilst interpreting the research findings.

Although the findings have provided an insight into the various factors that may explain ethnic variations in psychological distress, there are potential limitations to the conclusions drawn from the studies. Methodological issues of concern in the studies selected have been discussed and it is necessary to evaluate the research findings with these limitations in mind. Additional issues emerging from

the studies include conceptual problems associated with theoretical definitions of constructs such as ethnicity and social support.

As far as the author of the review is aware, there are no prospective cohort studies which address the role of social support as an explanatory factor for ethnic variations in levels of adolescent psychological distress.

The main aim of the literature review was to assess ethnic variations in psychological distress and outline whether ethnicity, cultural identity and social support contribute to the development of psychological distress. Numerous methodological and conceptual issues have been taken into consideration whilst interpreting the research findings and the key findings in the field have been illustrated.

Several of the studies have indicated that overall psychiatric symptomatology is frequently reported as lower for minority groups. The publications reviewed suggest that psychosocial variables, including acculturative style and social support, may explain some of the variation in psychological distress across ethnicity. However, inconsistencies in the research findings are apparent. Acculturative style has provided contradictory findings as to which mode is the most adaptive in terms of the individual experiencing fewer behavioural problems. Furthermore, it remains unclear whether the level of social support is associated with ethnic variations in psychological distress.

2.10 Chapter Summary and Hypotheses of the Thesis

To assess the assertion that particular minority groups illustrate protective effects of social support, a greater understanding of whether social support can account for ethnic variations in psychological distress is necessary, or whether lower levels of psychological distress can be explained by acculturative style such as choice of culturally similar or dissimilar peers. Furthermore, little research has examined the impact of changes in social support overtime on psychological distress in an ethnically diverse sample.

This thesis uses data from a prospective longitudinal study to investigate levels of social support, acculturative style (measured by friendship choices) and psychological distress in an ethnically diverse sample. At baseline (in 2001), participants in this study were 11-14 years of age and the same adolescents were followed up two years later in 2003, when they were 13-16 years of age. The overriding aims of this thesis are as follows. Firstly, it is intended to identify which ethnic group(s) report higher levels of psychological distress or depressive symptoms in an ethnically diverse sample of East London adolescents. An additional aim of this thesis is to investigate the risk and protective effects of social support. From the literature presented in this chapter, one can speculate that lower levels of psychological distress amongst certain minority groups can be explained by protective effects of social support, yet limitations in the existing research have not been able to address this issue appropriately. Furthermore, the existing research has not been able to pin point whether culturally similar friendship choices actually underlie lower levels of psychological distress amongst minority groups. Cross sectional findings from the RELACHS study revealed integrated friendship choices are protective for East London adolescents (Bhui *et al.*, 2005). Building upon Bhui *et al.*'s findings, it could be argued that integrated friendship choices are prospectively associated with lower levels of psychological distress. The next aim of this thesis is to explore the role of friendship choices as a risk or protective factor for psychological distress. Collectively, the aims of the thesis attempt to unpack the association between ethnicity, social support and friendship choices. The hypotheses of this thesis are as follows:

Hypothesis 1) Low baseline social support can account for ethnic variations in psychological distress and depressive symptoms at follow-up.

In an attempt to replicate previous research findings reported by Lewinsohn *et al.*, 1994, Hypothesis 2 specifically investigates low levels of family social

support and the association that low family support may have upon depressive symptoms:

Hypothesis 2) Low family social support at baseline is significantly associated with depressive symptoms at follow-up.

As mentioned previously, female pupils tend to report higher levels of family support than males, yet female pupils also report a rise in psychological distress from pre-adolescence to adolescence. Hypothesis 3 examines whether low levels of family support at baseline have an adverse effect upon psychological distress at follow-up on female pupils but not male pupils.

Hypothesis 3) There is an interaction between social support and gender predicting psychological distress and depressive symptoms.

Findings from the Native Hawaiian Research Development Program suggest that lower levels of family social support have adverse effects upon some ethnic groups, where low levels of family social support may be more detrimental to groups where the family is an integral part of the culture. With this in mind, and the fact that more in depth analyses in this thesis will be conducted on the three largest ethnic groups only, the following hypothesis predicts that:

Hypothesis 4) Lower levels of family social support have an adverse effect (greater levels of psychological distress or depressive symptoms) on Bangladeshi pupils compared with White UK pupils and Black pupils.

Hypotheses 1 to 4 form the basis of Chapter 4 of the thesis. Hypothesis 5 (to be addressed in Chapter 5) builds upon the findings from Chapter 4 and explores ethnic variations in friendship choices.

Hypothesis 5) Traditional or Integrated friendship choices account for lower rates of psychological distress in those ethnic groups reporting lower levels of psychological distress.

Chapter 7 examines changes in social support over time and the impact that these changes have upon mental health outcomes. In an attempt to build upon Hypothesis 4 (Chapter 4), Hypothesis 6 examines the impact that a decrease in family social support has upon mental health outcomes at follow-up:

Hypothesis 6) A relative decrease in family social support overtime is associated with depressive symptoms measured as MFQ Caseness and psychological distress measured by the SDQ at 2-year follow-up.

Chapter 3

Methodology

3.1 Research with East London Adolescents: Community Health Survey (RELACHS)

RELACHS is a school based prospective epidemiological survey. To date, three Phases of data collection have been undertaken. This thesis uses data from Phase I and Phase II of the RELACHS Study only. In 2001, Phase I of the RELACHS study was carried out aiming to recruit 2800 pupils in year 7 (11-12 years) and year 9 (13-14 years). Phase II of the study was carried out in 2003.

Detailed information regarding sample size and selection, consent, procedure, participants, procedure and response rate and measures are provided below.

3.1.1 Sample Size

The principal investigators from the RELACHS study calculated that a sample size of 2800 pupils would be sufficient to estimate prevalence of psychological distress with reasonable precision. National data from the 1999 British Child and Adolescent Mental Health Survey (Meltzer *et al.*, 2000) and the Health of Young People 1996-1997 Survey (Prescott-Clarke and Primatesta, 1998) suggest that approximately 10% of young people have a high score of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1994). A sample size of 2800 was based on the fact that 95% confidence intervals should be within $\pm 2\%$ of the 10% prevalence estimates of psychological distress, it is necessary to allow for design effect and non-response estimated at 30%.

3.1.2 Sample Selection

The sample in this study was selected from three London boroughs of Hackney, Newham and Tower Hamlets with the objective of obtaining a representative sample of pupils in the boroughs. A two-stage stratified sampling strategy was used.

Stage 1: At the first stage of sampling, eligible schools were stratified by Local Education Authority (LEA) borough and school type (comprehensive, voluntary, and other). Seven schools were excluded that were independent fee-paying schools or schools with 20 or fewer pupils in each year. Special schools for children with learning disabilities were excluded because the questionnaire would not be valid for this population. Pupils attending school at Pupil Referral Units were included in the study.

Thirty schools were randomly selected and balanced to represent single and mixed sex schools from the forty-two schools. Three of the thirty schools selected refused to take part in the RELACHS study. One school in the borough of Tower Hamlets refused because of over commitment, it was replaced by another school in Tower Hamlets with a similar ethnic and socio-economic status profile. The remaining two schools refusing to participate in the study were in the London Borough of Hackney. One of these refusals was due to over commitment and the remaining school was a religious school that refused because of the content of the questionnaire. As a replacement for the over committed school, two schools that had already been recruited into the study with similar ethnic and socio-economic profile were over sampled. A suitable substitution for the religious school was not recruited. In total, therefore, twenty-eight schools participated in the study.

Stage 2: At the second stage of stratification in Phase I of the study, two representative mixed-ability classes from year 7 (11-12 years) and year 9 (13-14 years) were selected. The contact teacher at each school was asked to

select two classes that were representative of year 7 and year 9 at the school. None of the classes selected were streamed according to academic ability.

3.2 Pupil and Parental Consent for the Study

At Phase I of the study, parents were given the opportunity to opt their child out of the study and pupils actively consented to participate on the day of data collection in their classroom. At Phase II of the study, parents opted their children into the study and pupils actively consented to participate on the day of data collection in their classroom.

3.3 Ethical Approval for the Study

Ethical approval was given to conduct the study by the ethics committee of East London and the City and Barking and Havering. Local education authorities also granted approval for the study to be conducted.

3.4 Data Collection Procedure

Head teachers from each school included in the study granted permission for their school to participate in the RELACHS study. Teachers, parents and pupils each received information sheets about the RELACHS study prior to the school visit. Pupils completed the questionnaire in their classrooms under the supervision of researchers. Pupils were assured that their responses would remain confidential and anonymous.

3.5 Response Rate

Phase I included 2790 male and female pupils, with an overall response rate of 84%. In 2003, 2094 pupils were surveyed, providing a response rate of 78% for Phase II. 2094 of those pupils had participated in Phase I, with a response rate of 75% of the original sample. Table 3.1 displays response rates for Phase II by

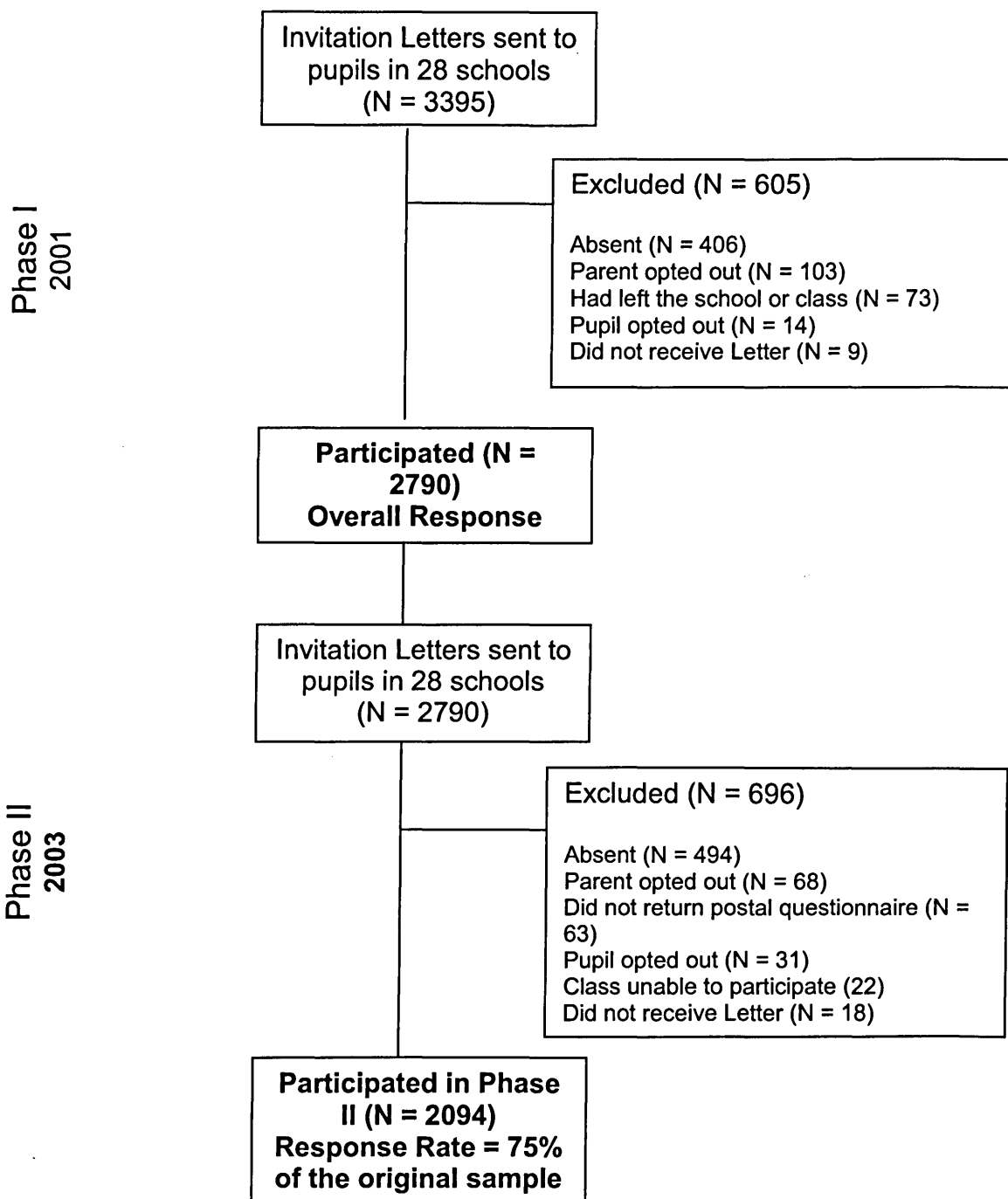
ethnicity. The response rate ranged from 67.5% - 80% across the eight ethnic groups included in this study.

In 2005, 1030 pupils were surveyed, providing a response rate of 71% for Phase III. 769 of those pupils surveyed in Phase III had participated in Phase I, with an overall response rate of 51% of the original sample. This thesis uses data from Phases I – II only. Figure 3.1 displays a consort diagram of the participants through Phase I and Phase II of the study.

Table 3.1 Response Rate at Phase II of the Study by Eight Ethnic Groups

Ethnicity	Response Rate (%) at Phase II
White UK	67.5
White Other	69.6
Bangladeshi	77.1
Pakistani	77.7
Indian	82.0
Black	79.7
Mixed Race	69.9
Other	80.0
Overall	75.0

Figure 3.1 Consort diagram showing the flow of participants through Phase I and Phase II



3.6 Measures

The RELACHS study involved self-report questionnaires and measures of height, weight, pulse rate, bioelectrical impedance (a measure of body fat) and dental measures. The questionnaire included age-appropriate, and, wherever possible, standardised and validated questions were used in order to increase the overall reliability and validity of data. Several measures of health and well-being were included in the questionnaire. Only the measures of mental health, social support, cultural identity and additional covariate variables entered into the regression models are described in this chapter.

3.6.1 Ethnicity

Ethnic group membership was based on self-report measures using ethnic categories from the 2001 UK census, supplemented by questions on national group. In total, pupils were able to select one out of twenty four separate categories to their ethnic group. The categories of ethnicity in the questionnaire were as follows:

1. White UK
2. White Irish
3. White Greek
4. White Turkish
5. White Orthodox Jewish
6. White Kurdish
7. White Other
8. Mixed White and Black Caribbean
9. Mixed White and Black African
10. Mixed White and Asian
11. Mixed Other
12. Asian Indian
13. Asian Pakistani
14. Asian Bangladeshi
15. Asian Other
16. Black Caribbean

17. Black African
18. Black Somali
19. Black British
20. Black Other
21. Chinese
22. Vietnamese
23. Other
24. Mixed White and Black

Those pupils who did not select one of the twenty four categories of ethnicity were defined as having an 'other' ethnicity and were asked to provide written details of their ethnicity. It was felt that these categories of ethnicity are accepted as suitable categories to classify ethnic group. It is unfortunate that small numbers of Black British, Black African and Black Caribbean pupils in the results chapters led to these ethnic groups being aggregated into a single 'Black' group for statistical analyses. The aggregated Black group comprised primarily of pupils defined as Black African (see Appendix 6).

3.6.2 Psychological Distress

This thesis uses two mental health outcomes. The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1994) is a measure of overall psychological distress and the Moods and Feelings Questionnaire (Angold, 1997) is a specific measure of depressive symptoms.

3.6.3 Strengths and Difficulties Questionnaire (SDQ; Goodman, 1994)

The SDQ measures psychological morbidity and is designed to detect behavioural, emotional or relationship difficulties. The questionnaire has been developed in several formats to meet the needs of researchers, clinicians or educationalists and may be completed by teachers, parents and the

adolescents. RELACHS used the self-completion version of the SDQ for 11-16 year olds (See Appendix 2 for a copy of the SDQ).

The questionnaire consisted of 25 items divided by 5 scales:

1. Emotional symptoms (5 items)
2. Conduct problems (5 items)
3. Hyperactivity/inattention (5 items)
4. Peer relationship problems (5 items)
5. Pro-social behaviour (5 items)

The sum of the scales 1 - 4 above generates a total difficulties score. A score of 17.5 and above was chosen as the threshold for young people considered having 'mental health problems'. This threshold is based on scores in national data where 10% of adolescents score within the 'higher' score band (Goodman *et al.*, 2000; Stansfeld *et al.*, 2004).

The SDQ has been used for different purposes including clinical assessment/screening, outcome evaluation and epidemiology and research (Goodman, 2001; Hawes and Dadds, 2004; Prescott-Clarke and Primatesta, 1998). Psychometric properties of the SDQ have been evaluated in the UK (Thabet, 2000) and non-UK samples, including Bangladeshi adolescents (Koskelainen *et al.*, 2000; Klasen *et al.*, 2000). The existing evidence indicates sound psychometric properties of the SDQ and is generally supportive of reliability and validity of the SDQ (Muris *et al.*, 2003).

3.6.4 Short Moods and Feelings Questionnaire (SMFQ; Angold *et al.*, 1987)

The SMFQ is a self-report measure of childhood and adolescent depression evaluating core depressive symptomatology. The SMFQ is a 13-item measure for 8-17 year olds and can be used as a screening measure for epidemiological studies. Each statement is responded on a 3-point likert scale of 'true', 'sometimes true' or 'not true'. A score of 8 and above was chosen as the

threshold for the 'higher' score band. This threshold has yielded a positive predictive value of 80% in the original validation against the Diagnostic Interview Schedule for Children – Depression Scale (Angold *et al.*, 1995). See Appendix 3 for a copy of the MFQ.

3.6.5 Cultural Identity Schedule

The Cultural Identity Scale was developed for RELACHS using theoretical framework of Berry (1980). Berry *et al.*, (1986) proposed that acculturation is based on the attitude of the individual towards the original culture and towards host-group relationships. Acculturation can take place on two dimensions that are independent: degree of identification with own culture and degree of identification with host culture. Using these two dimensions, people may be classified into one of four groups; assimilated, those who identify with the host culture only; traditional, those who identify with their own culture only; marginalised, those who identify with neither culture; integrated, those who identify with both host and culture.

The classification method dichotomised Likert responses into either 'strong' or 'weak' identification for the two dimensions tapping identification for host and own culture (see Appendix 4 for friendship choices at baseline questions).

Phase I questions included constructs measuring cultural identification in terms of clothing, friendship and language preferences. Phase II Cultural Identity questions also measured the same constructs. However, the questions changed in Phase II and Phase III in order to measure different identities when at home with parents and at school with friends. This thesis only used data regarding friendship choices of pupils. The use of friendship choices as opposed to clothing or any other domains of acculturative style were used as one of the hypotheses of this study is to investigate whether traditional or integrated friendship choices account for lower rates of psychological distress.

Table (3.2) below illustrates the changes in the Cultural Identity Schedule from Phases I - III:

Table 3.2 Changes in the Cultural Identity Schedule from Phases I -III

Cultural Identity Questions – Phase I	Cultural Identity Questions - Phase II	Cultural Identity Questions – Phase III
Clothing Identity	<u>Clothing Identity</u> With friends With parents	<u>Clothing Identity</u> With friends With parents
Friendship Identity	<u>Friendship Identity</u> At school Outside School	<u>Friendship Identity</u> At school Outside School
Language Identity	<u>Language Identity</u>	
	<u>Dating Identity</u>	

3.6.6 Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988)

The MSPSS is a 12-item self-report measure of social support. Each statement is scored on a 7-point Likert scale and assesses social support from three sources: family, friends and significant other or special person (see Appendix 5 for the MSPSS questions). MSPSS produces scores on a continuous measure. Higher scores on the MSPSS were indicative of higher levels of social support compared with lower scores on the MSPSS. Zimet *et al.*, (1988) established that the scale has good concurrent, construct and discriminant validity. The MSPSS has high internal and test-retest reliability, with an overall coefficient of 0.88 (Zimet *et al.*, 1988).

At both Phase I and Phase II, MSPSS scores were negatively skewed. As the MSPSS scores were not normally distributed, the MSPSS was split into 'high'

social support, 'medium' social support or 'low' social support, according to tertiles of the MSPSS. Pupils scoring in the lowest tertile, were defined as reporting 'low' social support. Pupils scoring in the highest tertile were defined as reporting 'high' social support. Pupils scoring within the middle tertile were defined as reporting 'medium' levels of social support. Tertiles were based on the raw MSPSS scores of eight ethnic groups and were calculated at both Phase I and Phase II.

3.6.7 Socio-economic Status

Multiple indicators of socio-economic status were measured in the RELACHS Study, using data collected by questionnaire, and directly from the local education authorities and schools. A limitation was that we were unable to collect information about socioeconomic status from parents and were reliant on pupils' report of their family circumstances. Thus it was useful to have independently collected data from schools and local authorities. Multiple measurement methods were likely to increase the reliability of responses reported by the adolescent. Previous research conducted by Rogers *et al.*, (1995) and HEA (1997) suggests that the use of multiple indicators can reliably indicate household socio-economic status.

Indicators of socio-economic status measured in the questionnaire were parental employment status, household crowding (>1.5 persons per room), and household car ownership. Additional data collected from school records included eligibility for free school meals.

3.7 The Author's Role in the RELACHS Study

As mentioned at an earlier stage in this chapter, this thesis uses data from two waves of the RELACHS Study. Although data from wave III of the RELACHS study is not used in analyses for this thesis, the author assisted with data collection in wave III of the study. This involved administering the study questionnaire in the classroom, answering pupils' queries from the questionnaire and checking the questionnaire for missing data.

During three school visits, the author organized for pupils to participate in focus group discussions. Those pupils who had completed the study questionnaire well within the time allocated were invited to join the focus group for discussions. The discussion was prompted by a series of vignettes detailing a social predicament faced by a young person. This generated discussion on what the pupils would do if they faced the predicament described in the vignette. The discussion from these group discussions were not used for analyses in this thesis. Though the discussions arising from the focus groups raised some interesting issues, this qualitative data was not used for the following reasons: firstly, the primary aim of this thesis was to use quantitative data from the RELACHS study to investigate the research hypotheses and it was not an aim of the author at the start of the thesis to use the qualitative data for analyses. Secondly, due to a shortage of time, one of the focus group sessions lasted only fifteen minutes. It was felt that this was too short a time to produce quality discussion from the pupils in the group.

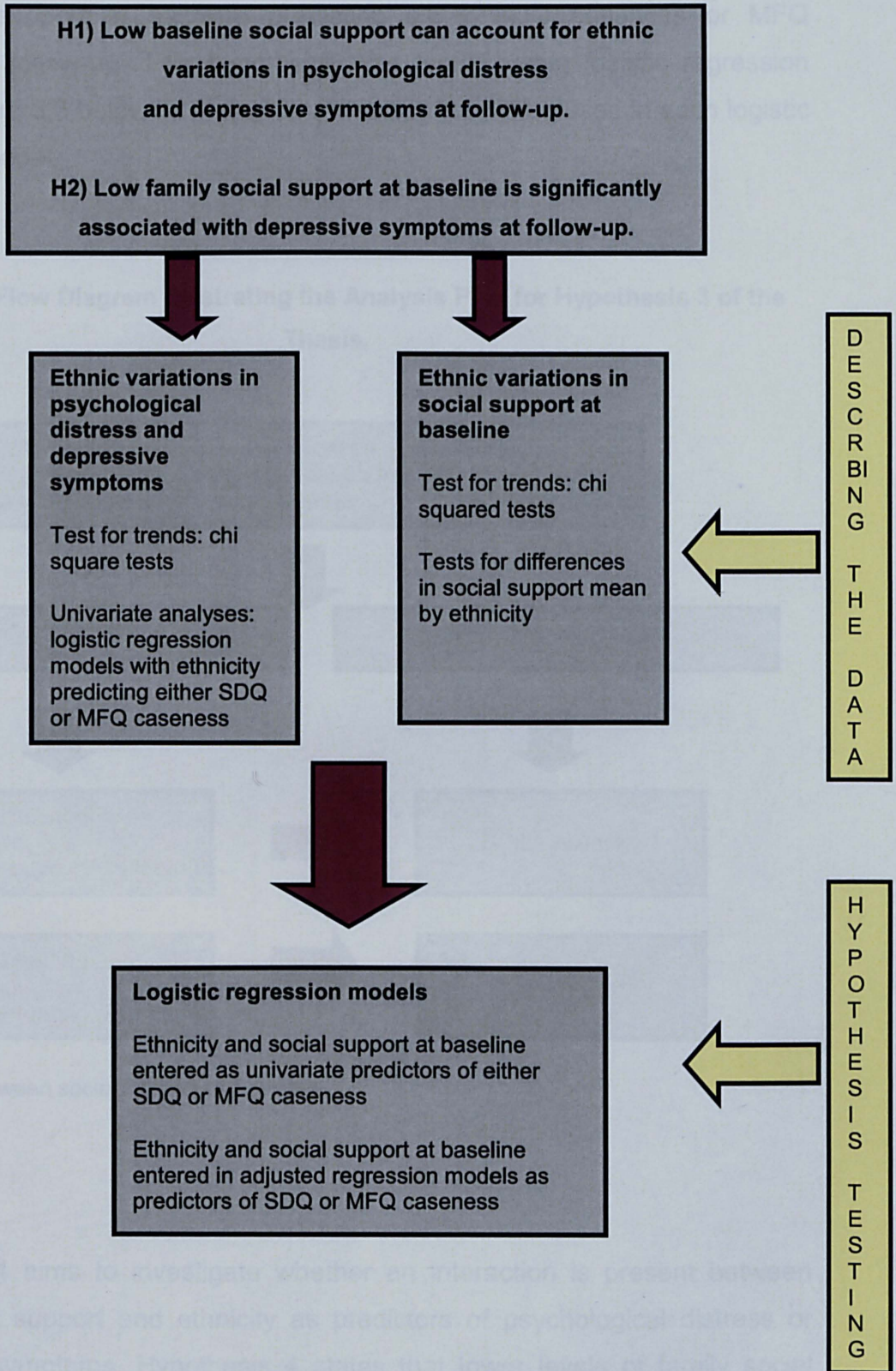
An additional role carried out by the author of the thesis involved preparation of the variables used in the analyses. Preparation of social support (separate variables at baseline and follow-up), cultural identity (separate variables at baseline and follow-up) and a dichotomised variable for all missing values in the data were prepared by the author.

3.8 Statistical Analysis Plan for the Thesis

Each hypothesis from this thesis will be tested by a series of statistical analyses. In this section of the thesis, an analysis plan for each hypothesis is presented.

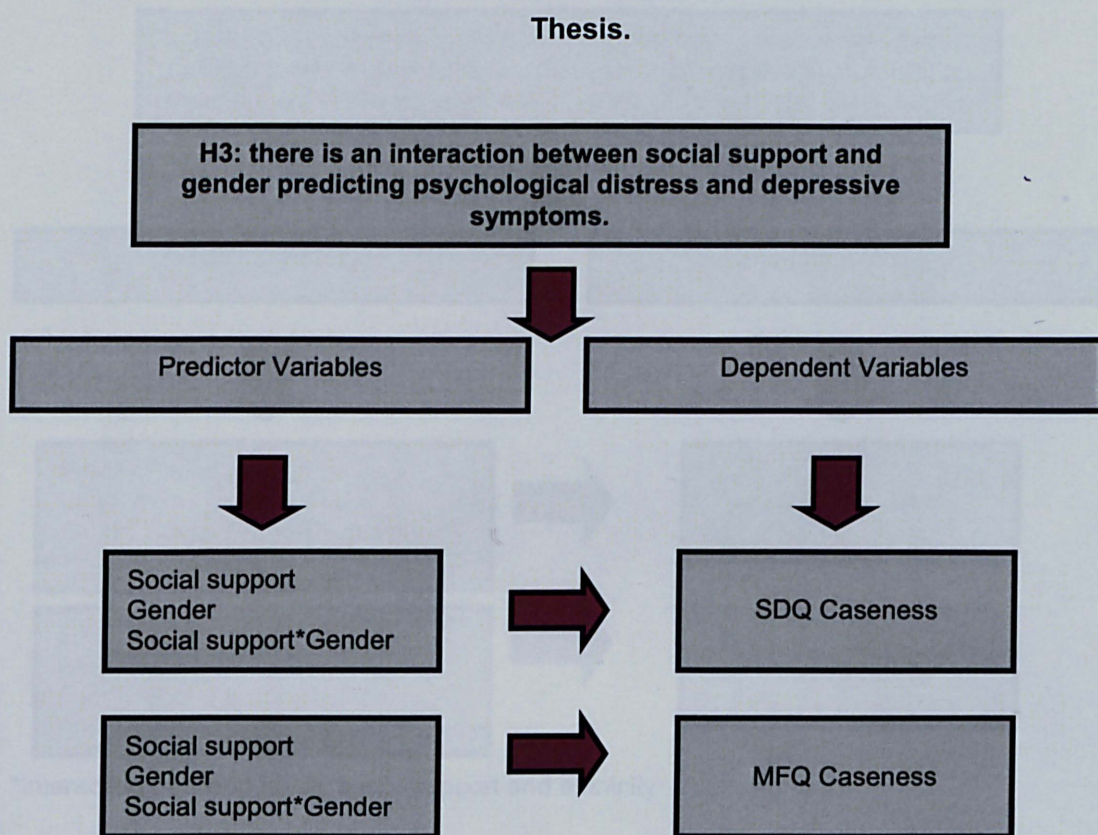
Hypothesis 1 states that low baseline social support can account for ethnic variations in psychological distress and depressive symptoms at follow-up. Figure 3.2 below displays a flow diagram of the issues that need to be investigated for Hypothesis 1 and 2 and the statistical analyses that accompany these issues.

Figure 3.2 Flow Diagram Illustrating the Analysis Plan for Hypotheses 1 and 2 of the Thesis.



Hypothesis 3 states that there is an interaction between social support and gender predicting psychological distress and depressive symptoms. This hypothesis can be tested by means of testing for an interaction between gender and social support at baseline predicting either SDQ caseness or MFQ caseness at follow-up. This hypothesis was tested using logistic regression models. Figure 3.3 below displays the variables that will be used in each logistic regression model.

Figure 3.3 Flow Diagram Illustrating the Analysis Plan for Hypothesis 3 of the Thesis.

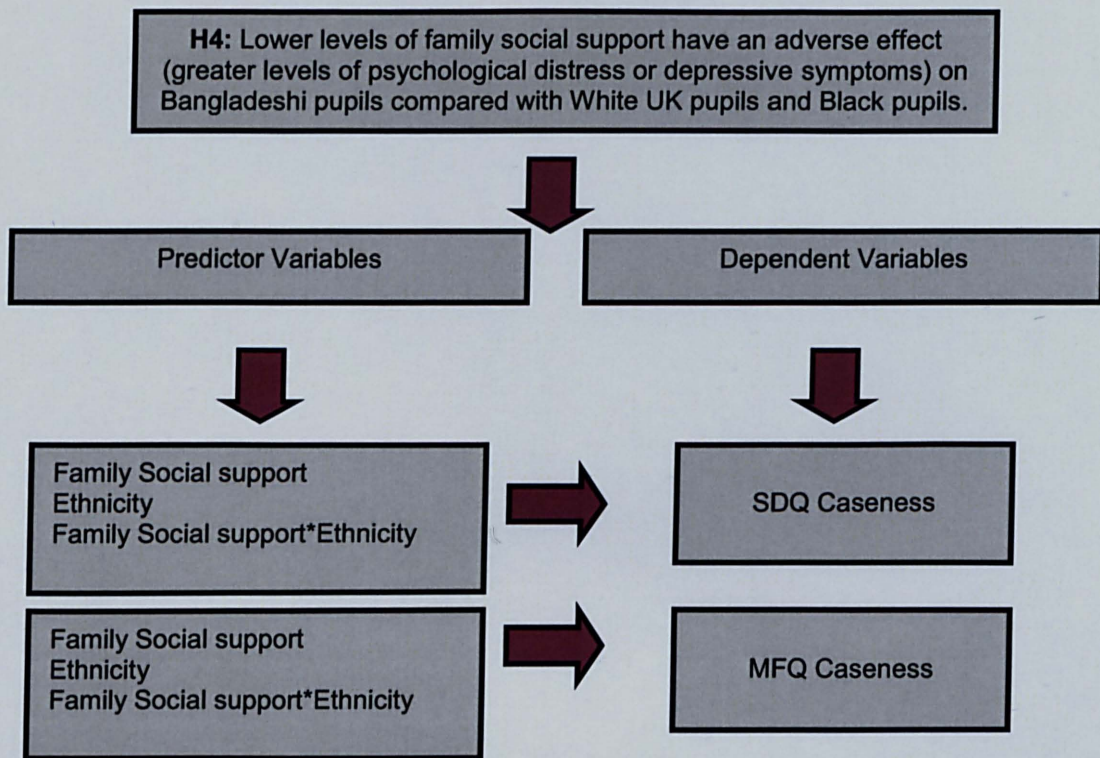


*Interaction between social support and gender

Hypothesis 4 aims to investigate whether an interaction is present between family social support and ethnicity as predictors of psychological distress or depressive symptoms. Hypothesis 4 states that lower levels of family social support have an adverse effect (greater levels of psychological distress or

depressive symptoms) on Bangladeshi pupils compared with White UK pupils and Black pupils. Figure 3.4 below displays the variables that will be used in each logistic regression model to test Hypothesis 4.

Figure 3.4 Flow Diagram Illustrating the Analysis Plan for Hypothesis 4 of the Thesis.

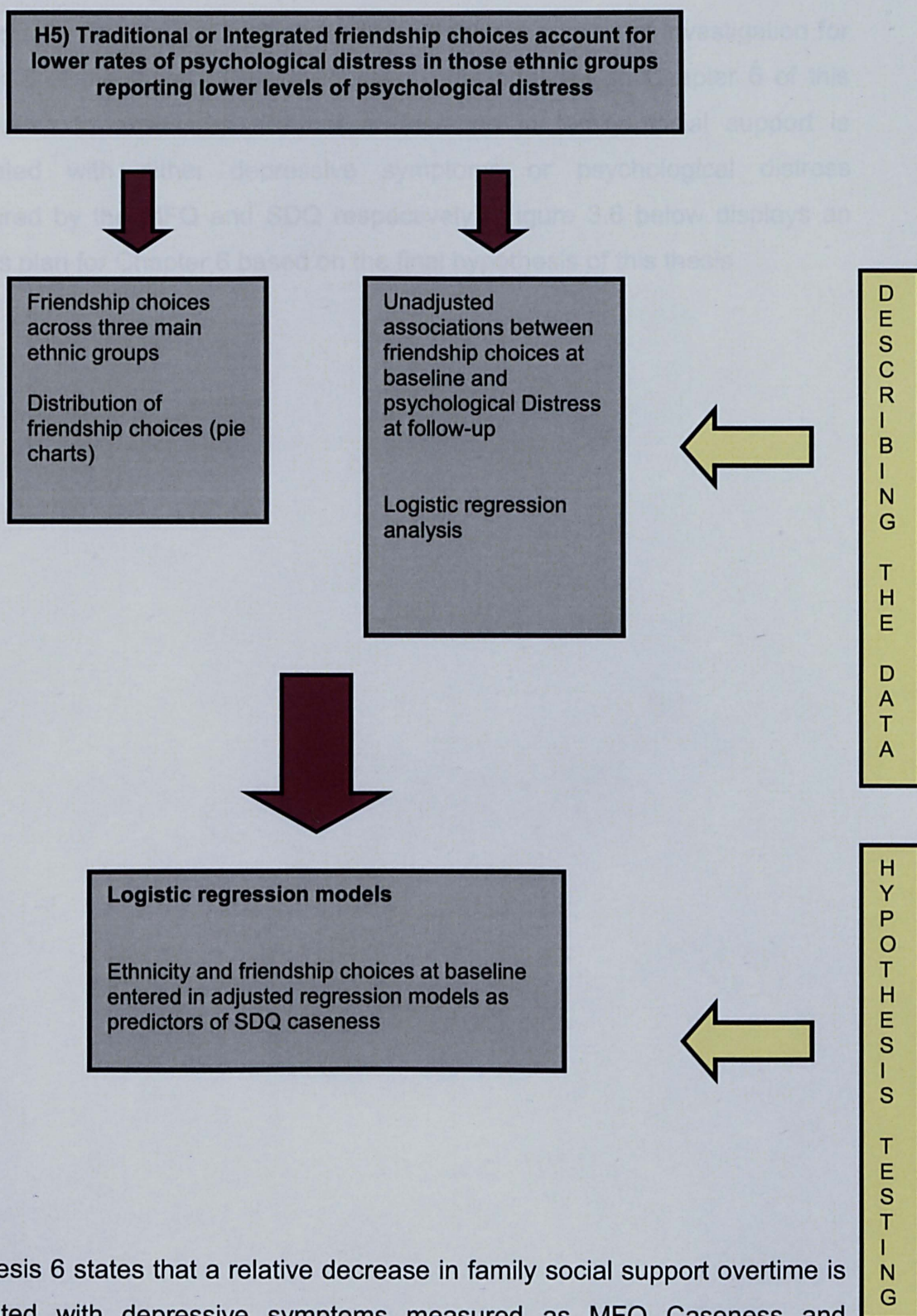


*Interaction between family social support and ethnicity

Hypotheses 1-4 form the basis of chapter 4 of this thesis. Chapter 5 of the thesis aims to build on the findings of chapter 4. Chapter 5 aims to investigate whether culturally similar or integrated friendship choices are a protective factor in those adolescents that report significantly lower levels of psychological distress only (see figure 3.5). Hypothesis 5 states that traditional or Integrated friendship choices account for lower rates of psychological distress in those

ethnic groups reporting lower levels of psychological distress. Depressive symptoms as an outcome are not examined in this hypothesis as neither Bangladeshi nor Black pupils reported lower levels of depressive symptoms compared with White UK pupils in this sample (this finding will be demonstrated at the end of Chapter 4 of this thesis).

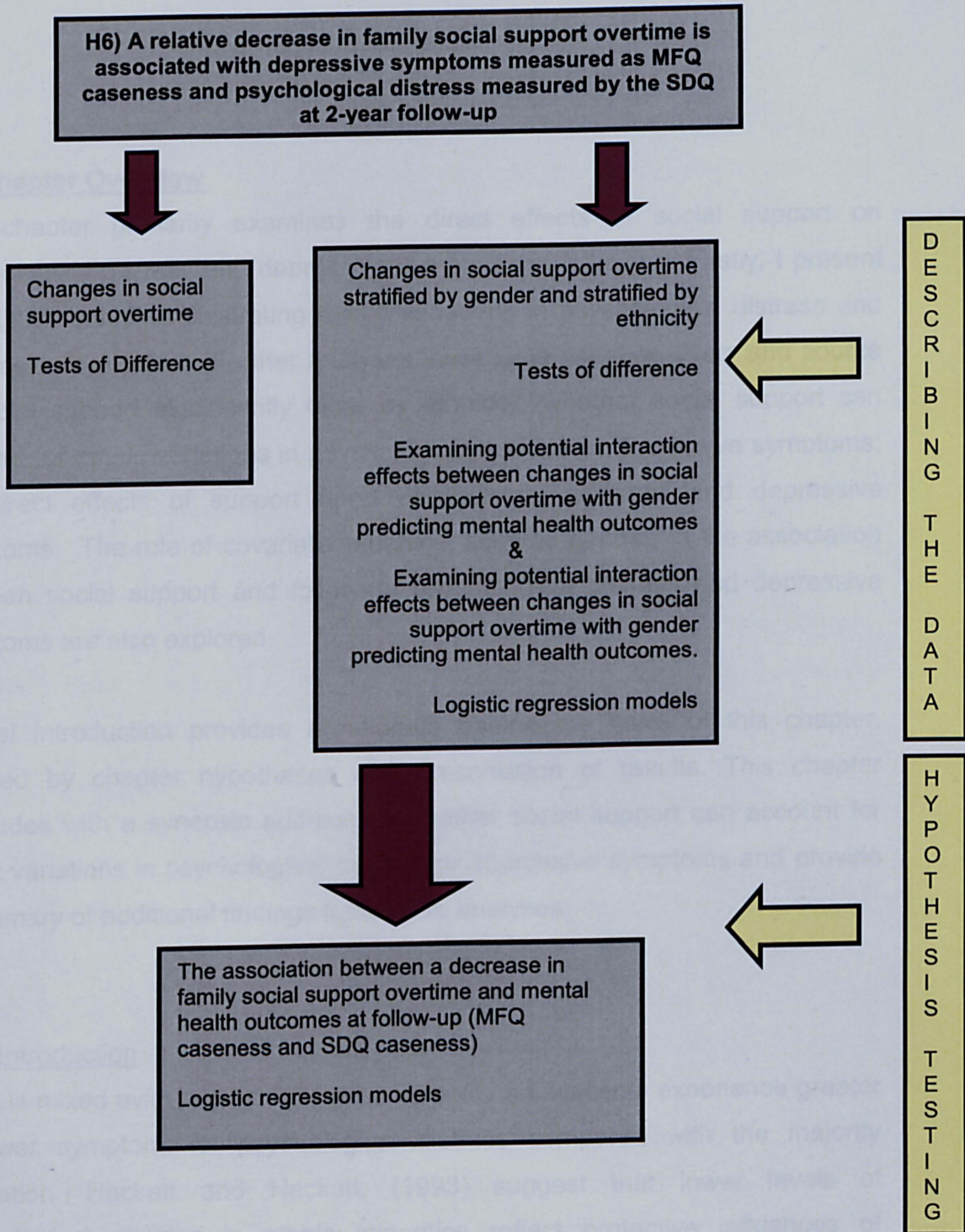
Figure 3.5 Flow Diagram Illustrating the Analysis Plan for Hypothesis 5 of the Thesis.



Hypothesis 6 states that a relative decrease in family social support overtime is associated with depressive symptoms measured as MFQ Caseness and psychological distress measured by the SDQ at 2-year follow-up. This hypothesis is tested in Chapter 6 of this thesis and attempts to build upon

finding from Chapter 4 of this thesis. Analyses from Chapter 4 will reveal that lower levels of family social support at baseline are associated with depressive symptoms for female pupils. This finding will form the basis of investigation for Chapter 6 of the thesis. The key question that analyses in Chapter 6 of this thesis aims to answer is whether a decrease in family social support is associated with either depressive symptoms or psychological distress (measured by the MFQ and SDQ respectively). Figure 3.6 below displays an analysis plan for Chapter 6 based on the final hypothesis of this thesis.

Figure 3.6 Flow Diagram Illustrating the Analysis Plan Hypothesis 6 of the Thesis.



Direct Effects of Baseline Social Support on Psychological Distress and Depressive Symptoms at Follow-up

Chapter 4

4.1 Chapter Overview

This chapter primarily examines the direct effects of social support on psychological distress and depressive symptoms at follow-up. Firstly, I present descriptive statistics illustrating ethnic variations in psychological distress and depressive symptoms. Further analyses investigate whether levels and source of social support significantly differ by ethnicity; whether social support can account for ethnic variations in psychological distress or depressive symptoms; the direct effects of support upon psychological distress and depressive symptoms. The role of covariate variables, such as gender, in the association between social support and follow-up psychological distress and depressive symptoms are also explored.

A brief introduction provides a rationale behind the basis of this chapter, followed by chapter hypotheses and presentation of results. This chapter concludes with a synopsis addressing whether social support can account for ethnic variations in psychological distress or depressive symptoms and provide a summary of additional findings from these analyses.

4.1.1 Introduction

There is mixed evidence as to whether minority adolescents experience greater or fewer symptoms of psychological distress compared with the majority population. Hackett and Hackett, (1993) suggest that lower levels of psychological distress in ethnic minorities reflect protective influences of culturally associated factors, especially social support. One mechanism by which social support operates is by having a direct influence on psychological distress (Kessler and McLeod, 1985; Prince *et al.*, 1998). An association between low levels of social support and psychological distress, including

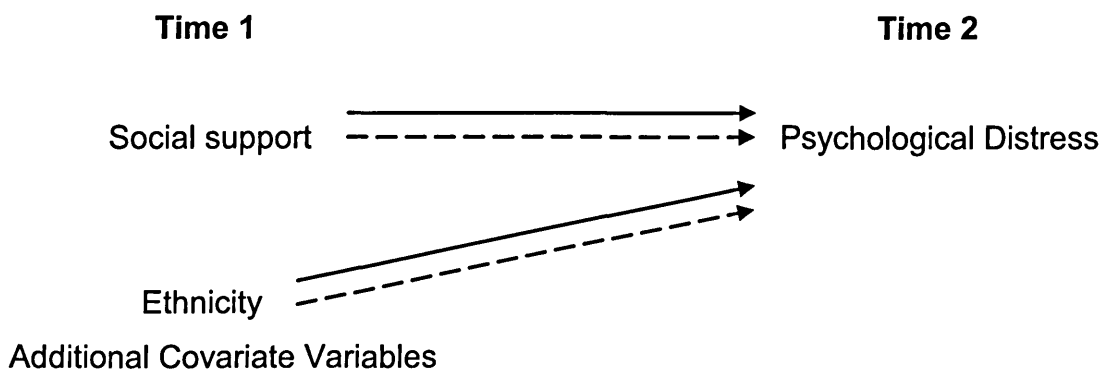
depressive symptoms, was reported at baseline for the RELACHS study. At baseline, Klineberg *et al.*, (2006) found an increased risk of psychological distress in pupils reporting low family and low overall social support compared with pupils reporting high levels of family or overall social support. Furthermore, an increased risk of depressive symptoms was associated with low social support from friends, family and overall social support. Although there were associations between social support and psychological distress and depressive symptoms at baseline, social support could not account for ethnic variations in psychological distress (Klineberg *et al.*, 2006). However, cross-sectional associations between social support and mental health outcomes could not determine direction of association between variables.

4.1.2 The Role of Risk Factors

By definition, a risk factor should temporally precede the outcome measure of interest and analyses in this chapter exclude pupils scoring highly on baseline psychological distress or depressive symptoms and thus reduce the likelihood that any associations could be due to pupils experiencing psychological distress or depressive symptoms being less likely to seek out social support.

The relationship between social support and mental health outcomes cannot be fully appreciated without considering potential covariate variables which may operate on the predictor-outcome pathway. From the literature review, it is not possible to ascertain whether social support and ethnicity are independent risk factors for follow-up psychological distress as findings were from separate studies. Therefore, associations between social support and psychological distress may weaken once adjustments for covariates are made. An independent association with psychological distress is indicated by a solid arrow in figure 4.1 where a significant association between risk factor and psychological distress will remain once covariates are adjusted for. A dotted arrow in figure 4.1 indicates an association that weakens when other risk factors or covariate variables are considered.

Figure 4.1 Path diagram of social support, ethnicity (and covariate variables) and psychological distress.



One aim of this chapter is to elucidate whether social support is an independent risk factor for psychological distress and depressive symptoms after adjusting for ethnicity and additional covariate variables. Use of regression analyses and adjustment for covariate variables indicates as to whether social support has a direct effect upon either psychological distress or depressive symptoms.

4.1.3 Chapter Hypotheses

Analyses in this chapter initially present a descriptive statistics of self-report levels of psychological distress and depressive symptoms for each ethnic group. The Hypotheses of this Chapter are as follows:

Hypothesis 1) Low baseline social support 'can account for ethnic variations in psychological distress and depressive symptoms at follow-up.

Hypothesis 2) Low family social support at baseline is significantly associated with depressive symptoms at follow-up.

Hypothesis 3) There is an interaction between social support and gender predicting psychological distress and depressive symptoms.

Hypothesis 4) Lower levels of family social support have an adverse effect (greater levels of psychological distress or depressive symptoms) on Bangladeshi pupils compared with White UK pupils and Black pupils.

Examination of these hypotheses will paint a clearer picture of the role of social support as a risk factor for mental health outcomes.

4.2 Describing the Nature of the Sample and Missing Values in the Sample

1503 pupils participated in Wave I and Wave II of the study and were defined as non-cases on baseline measures of the SDQ and the MFQ. However, 238 pupils had missing data for baseline social support, follow-up mental health, and ethnicity or baseline covariate variables. Sample characteristics are described before missing data is described and whether pupils with data missing on social support and covariate variables are more likely to have data missing on mental health outcomes at follow-up.

Pupils in this sample are mainly socio-economically deprived. Approximately 40% of pupils lived in households with neither parent employed. Half of the sample was eligible for free school meals. 7.5% of pupils were defined as an SDQ case at follow-up and 18.5% of pupils were defined as an MFQ Case at follow-up. These levels are slightly lower than pupils defined as SDQ and MFQ Cases by Stansfeld *et al.*, (2004). This may be due to the fact that baseline SDQ or MFQ cases were excluded from these analyses.

One way to analyse missing data is to investigate whether there is a pattern in the way that the data is missing. For example, it may be the case that pupils who have data missing at baseline are less likely to have complete data available at follow-up. Table 4.1 displays the odds ratios and 95% confidence intervals for whether covariate and outcome measures have complete data for SDQ caseness and MFQ caseness for all pupils (N=1503) at follow-up. Only 3 pupils had missing data for ownership of family vehicle and therefore this variable was not included in Table 4.1. There was no missing data for year group or gender in these analyses. The majority of pupils with data missing on

social support or covariate variables were statistically more likely to have data missing on SDQ or MFQ status at follow-up. It is not therefore possible to infer whether pupils with data missing are more likely to be defined as an SDQ or MFQ case as there is a strong association between missing data for social support and covariate variables and missing data for mental health outcomes. Interestingly, an additional consistent finding emerging from Table 4.1 concerns the finding that pupils defined as Black were less likely to have complete data on the SDQ and the MFQ at follow-up. This finding will need to be taken into consideration whilst interpreting the findings from this thesis.

Table 4.1 Odds Ratios and 95% Confidence Intervals to Predict Complete Data on SDQ or MFQ Caseness for Covariates Including Unobserved Data

	Odds Ratios and 95% Confidence Intervals to Predict Complete Data on follow-up SDQ Status	Odds Ratios and 95% Confidence Intervals to Predict Complete Data on follow-up MFQ Status
Year Group		
Year 7 (775)	1	1
Year 9 (728)	0.90 (0.51, 1.58)	1.79 (1.26, 2.52)**
Country of Birth		
UK (1202)	1	1
Non-UK (289)	0.40 (0.22, 0.72)*	0.48 (0.33, 0.70)**
Missing (8)	0.08 (0.01, 0.45)*	0.27 (0.05, 1.49)
Length of Time in the UK		
All of Pupil's Life (1124)	1	1
Over 10 Years (149)	1.56 (0.43, 5.62)	0.97 (0.54, 1.75)
Less than 10 Years (213)	0.31 (0.17, 0.58)**	0.49 (0.32, 0.74)**
Missing (17)	0.25 (0.05, 1.28)	0.47 (0.13, 1.70)
Parental Employment Status		
Not Employed (507)	1	1
Mother Employed (178)	1.57 (0.50, 4.89)	1.05 (0.61, 1.81)
Father Employed (353)	1.08 (0.49, 2.35)	1.14 (0.74, 1.78)
Both Parents Employed (426)	0.91 (0.45, 1.85)	1.76 (1.10, 2.81)*
Missing (39)	0.22 (0.08, 0.64)**	0.39 (0.18, 0.86)*
Free School Meals		
Not Eligible (723)	1	1
Eligible (761)	0.69 (0.39, 1.23)	0.55 (0.38, 0.78)**
Missing (19)	0.89 (0.07, 11.30)	0.76 (0.17, 3.52)
Gender		
Male (783)	1	1
Female (720)	2.19 (1.19, 4.03)	2.08 (1.46, 2.98)**
Total Social Support		
Low (478)	1	1
Medium (480)	1.55 (0.78, 3.09)	1.34 (0.64, 2.84)
High (520)	1.99 (0.97, 4.11)	1.68 (0.98, 4.03)
Missing (25)	0.25 (0.08, 0.82)*	0.21 (0.10, 0.90)*
Friend Social Support		
Low (541)	1	1
Medium (411)	1.86 (0.88, 3.94)	1.28 (0.83, 1.97)
High (526)	1.79 (0.90, 3.55)	0.83 (1.85, 1.85)
Missing (25)	0.25 (0.08, 0.81)*	0.35 (0.13, 0.91)

Family Social Support		
Low (446)	1	1
Medium (500)	1.46 (0.70,3.03)	1.03 (0.65,1.64)
High (532)	1.22 (0.61,2.43)	<u>0.62 (0.41,0.95)*</u>
Missing (25)	<u>0.21 (0.06,0.72)*</u>	<u>0.25 (0.09,0.68)**</u>
Special Person Social Support 2		
Low (501)	1	1
Medium (415)	2.15 (0.96,4.85)	1.12 (0.71,1.77)
High (562)	1.37 (0.72,2.62)	0.82 (0.55,1.23)
Missing (25)	<u>0.24 (0.07,0.78)*</u>	<u>0.29 (0.12,0.76)*</u>
Total Social Support 2		
Low (371)	1	1
Medium (373)	1.68 (0.27,10.64)	0.14 (0.01,1.85)
High (477)	0.58 (0.15, 2.27)	0.22 (0.02,2.99)
Missing (282)	<u>0.06 (0.02, 0.18)**</u>	<u>0.00 (0.00,0.02)**</u>
Friend Social Support 2		
Low (382)	1	1
Medium (364)	0.69 (0.11,4.22)	0.16 (0.01,2.18)
High (475)	0.38 (0.08,1.81)	0.18 (0.02,2.32)
Missing (282)	<u>0.04 (0.01,0.15)**</u>	<u>0.00 (0.00,0.02)**</u>
Family Social Support 2		
Low (387)	1	1
Medium (382)	2.85 (0.31,26.68)	0.52 (0.07,3.67)
High (452)	0.45 (0.12, 1.73)	0.36 (0.06,2.22)
Missing (282)	<u>0.05 (0.02, 0.18)**</u>	<u>0.00 (0.00,0.02)**</u>
Special Person Social Support 2		
Low (402)	1	1
Medium (328)	no missing values	3.62 (0.30,43.16)
High (491)	1.24 (0.39,3.96)	0.82 (0.21, 3.27)
Missing (282)	<u>0.10 (0.04,0.24)**</u>	<u>0.01 (0.00, 0.03)**</u>
Ethnicity		
White UK(285)	1	1
White non-UK (73)	0.42 (0.9,1.79)	0.45 (0.19,1.02)
Bangladeshi (406)	0.71 (0.24,2.09)	0.65 (0.37,1.15)
Pakistani (101)	1.78 (0.21,15.47)	1.37 (0.49,3.77)
Indian (142)	0.62 (0.16,2.33)	2.46 (0.82,7.39)
Black (327)	<u>0.35 (0.13,0.96)*</u>	<u>0.44 (0.25,0.79)*</u>
Mixed (88)	1.55 (0.18,13.48)	0.71 (0.30,1.69)
Other (68)	0.73 (0.34,1.35)	1.55 (0.45,5.38)
Missing (13)	<u>0.09 (0.2,0.5)**</u>	<u>0.11 (0.03,0.38)**</u>

Table 4.2 displays the distribution of predictor, covariate and outcome variables for pupils included in the analysis (N=1265; based on eight ethnic groups) and pupils with missing data not included in the analysis (N=238). Compared with pupils included in the analysis, pupils excluded from the analysis due to missing data included: a significantly higher proportion of Year 7 pupils χ^2 (df=1, N = 1503) = 14.87 p < .01; a higher proportion of pupils born outside the UK χ^2 (df=1, N=1491) = 11.05 p < .01; a lower proportion of pupils that were not

eligible for free school meals χ^2 (df=1, N =1484) = 9.18 p < 0.01 and a lower proportion of pupils that had lived in the UK all their life Cramer's V (N=1486) = 0.12 p < 0.01. Subsequent analyses in the chapter will illustrate that these covariates (year group, country of birth, length of time in the UK and eligibility for free school meals) are not associated with mental health outcomes for adjusted analyses) and therefore these variables will not be associated with SDQ or MFQ caseness based on available data.

Table 4.2 Frequency Distribution of Predictor, Covariate and Outcome Variables for Pupils Included in the Analysis and Pupils not Included in the Analyses.

	Included in Analysis (N=1265) % (N)	Excluded from Analysis due to Missing Data (N=238) % (N)
Year Group at Baseline*		
Year 7	49.4 (625)	63.0 (150)
Year 9	50.6 (640)	37.0 (88)
Country of Birth*		
UK	82.1 (1038)	68.9 (164)
Non-UK	17.9 (227)	26.1 (62)
		Missing 5.0 (12)
Length of Time in the UK*		
All of Pupil's Life	77.2 (976)	62.2 (148)
Over 10 Years	10.0 (126)	9.7 (23)
Less than 10 Years	12.9 (163)	21.0 (50)
		Missing 7.1 (17)
Parental Employment Status		
Not Employed	33.9 (429)	32.8 (78)
Mother Employed	12.3 (155)	9.7 (23)
Father Employed	24.3 (307)	19.3 (46)
Both Parents Employed	29.6 (374)	21.8 (52)
		Missing 16.4 (39)
Ownership of Vehicle		
No	28.5 (360)	33.6 (80)
One	51.2 (648)	48.7 (116)
Two or More	20.3 (257)	16.4 (39)
		Missing 2.5 (3)
SDQ Caseness R2		
Not a Case	92.5 (1170)	76.9 (183)
Case	7.5 (95)	5.5 (13)
		Missing 17.6 (42)
MFQ Caseness R2		
Not a Case	81.5 (1031)	33.6 (80)
Case	18.5 (234)	8.0 (19)
		Missing 58.4 (139)
Free School Meal*		
Not Eligible	50.4 (637)	36.1 (86)
Eligible	49.6 (628)	55.9 (133)
		Missing 8.0 (19)
Gender		
Male	51.5 (651)	55.5 (132)

Female	48.5 (614)	44.5 (106)
Total Social Support R1		
Low	32.7 (414)	26.9 (64)
Medium	32.9 (416)	26.9 (64)
High	34.4 (435)	35.7 (85)
		Missing 10.5 (25)
Friend Social Support R1		
Low	36.1 (457)	35.3 (84)
Medium	27.8 (352)	24.8 (59)
High	36.0 (456)	29.4 (70)
		Missing 10.5 (25)
Family Social Support R1		
Low	30.9 (391)	23.1 (55)
Medium	65.1 (433)	28.2 (67)
High	34.9 (441)	38.2 (91)
		Missing 10.5 (25)
Special Person Social Support R1		
Low	34.3 (434)	28.2 (67)
Medium	28.7 (363)	21.8 (52)
High	37.0 (468)	39.5 (94)
		Missing 10.5 (25)

4.3 Descriptive Statistics: Describing Predictor, Covariate and Outcome Variables for Each Ethnic Group.

Table 4.3 below displays the distribution of scores of predictor, covariate and outcome variables stratified by ethnicity. These descriptive statistics show interesting differences in the distribution of social support at baseline by ethnicity where Bangladeshi and Pakistani pupils tend to report the lowest levels of social support at baseline (measured by total MSPSS and subscale scores) compared with all other ethnic groups in this study. This is an interesting pattern emerging in the data as tertiles of social support (based on the MSPSS) were derived on the basis of all ethnic groups. The statistical differences in ethnic differences in social support at baseline, along with ethnic differences in SDQ and MFQ caseness are discussed further in the subsequent sections of this chapter.

An additional interesting finding from these descriptive statistics concerns the distribution of measures of socio-economic status by ethnicity. Bangladeshi pupils appear to be highly socially deprived, with approximately three quarters of the pupils in this sample being eligible for free school meals. Furthermore,

almost sixty percent of Bangladeshi pupils reported that both parents were unemployed.

At this early stage in the analyses, differences in predictor, covariate and outcome variables are worth noting. These differences will be revisited later in this chapter in an attempt to address potential confounding variables in the association between social support and psychological distress.

Table 4.3 Distribution of Predictor, Covariate and Outcome Variables by Ethnicity

	Ethnicity (N)							
	White UK 248	White non-UK 59	Bangladeshi 344	Pakistani 89	Indian 129	Black 255	Mixed Race 76	Other 65
% Total Social Support (N)								
Low	29.0 (72)	25.4 (15)	42.4 (146)	43.8 (39)	27.9 (36)	28.6 (73)	17.1 (13)	30.8 (20)
Medium	31.0 (77)	39.0 (23)	30.5 (105)	29.2 (26)	38.8 (50)	32.5 (83)	34.2 (26)	40.0 (26)
High	39.9 (99)	35.6 (21)	27.0 (93)	27.0 (24)	33.3 (43)	38.8 (99)	48.7 (37)	29.2 (19)
Family Social Support								
Low	23.0 (57)	22.0 (13)	40.1 (138)	30.3 (27)	31.0 (40)	30.2 (77)	19.7 (15)	36.9 (24)
Medium	31.9 (79)	27.1 (16)	33.4 (115)	37.1 (33)	41.1 (53)	33.7 (86)	42.1 (32)	29.2 (19)
High	45.2 (112)	50.8 (30)	26.5 (91)	32.6 (29)	27.9 (36)	36.1 (92)	38.2 (29)	33.8 (22)
Friends Social Support								
Low	35.5 (88)	44.7 (26)	38.7 (133)	43.8 (39)	27.1 (35)	36.5 (93)	23.7 (18)	38.5 (25)
Medium	25.0 (62)	25.4 (15)	25.0 (86)	29.2 (26)	34.1 (44)	28.2 (72)	35.5 (27)	30.8 (20)
High	39.5 (98)	30.5 (18)	36.3 (125)	27.0 (24)	38.8 (50)	35.3 (90)	40.8 (31)	30.8 (20)
Special Person Social Support								
Low	27.8 (69)	28.8 (17)	46.5 (160)	46.1 (41)	35.7 (46)	26.7 (68)	14.5 (11)	33.8 (22)
Medium	31.0 (77)	32.2 (19)	26.5 (91)	25.8 (23)	26.4 (34)	28.2 (72)	34.2 (26)	32.3 (21)
High	41.1 (102)	39.0 (23)	27.0 (93)	28.1 (25)	38.0 (49)	45.1 (115)	51.3 (39)	33.8 (22)
Gender								
Male	51.6 (128)	54.2 (32)	55.2 (190)	64.0 (57)	48.8 (63)	43.5 (111)	47.4 (36)	52.3 (34)

Female	48.4 (120)	45.8 (27)	44.8 (154)	36.0 (32)	51.2 (66)	56.5 (144)	52.6 (40)	47.7 (31)
Year Group								
Year 7	50.0 (124)	64.4 (38)	45.9 (158)	50.6 (45)	38.8 (50)	52.2 (133)	53.9 (41)	55.4 (36)
Year 9	50.0 (124)	35.6 (21)	54.1 (186)	49.4 (44)	61.2 (79)	47.8 (122)	46.1 (35)	44.6 (29)
Parental Employment								
Not Employed	19.8 (49)	44.1 (26)	59.6 (205)	34.8 (31)	23.3 (30)	20.0 (51)	26.3 (20)	26.2 (17)
Mother Employed	17.7 (44)	15.3 (9)	2.0 (7)	3.4 (3)	7.8 (10)	25.1 (64)	15.8 (12)	9.2 (6)
Father Employed	20.2 (50)	18.6 (11)	32.8 (113)	49.4 (44)	22.5 (29)	12.5 (32)	13.2 (10)	27.7 (18)
Both Parents Employed	42.3 (105)	22.0 (13)	5.5 (19)	12.4 (11)	46.5 (60)	42.4 (108)	44.7 (34)	36.9 (24)
School Meals								
Eligible for Free Meals	37.9 (94)	52.5 (31)	75.6 (260)	48.3 (43)	73.6 (95)	40.4 (103)	53.9 (41)	56.9 (37)
Not Eligible for Free Meals	62.1 (154)	47.5 (28)	24.4 (84)	51.7 (46)	26.4 (34)	59.6 (152)	46.1 (35)	43.1 (28)
Ownership of Vehicle								
None	27.4 (68)	32.2 (19)	36.6 (126)	15.7 (14)	14.0 (18)	29.8 (76)	35.5 (27)	18.5 (12)
One	54.6 (128)	55.9 (33)	47.7 (164)	57.3 (51)	69.0 (89)	42.0 (107)	38.2 (29)	72.3 (47)
Two or More	21.0 (52)	11.9 (7)	15.7 (54)	27.0 (24)	17.1 (22)	28.2 (72)	26.3 (20)	9.2 (6)
Country of Birth								
UK	98.4 (244)	57.6 (34)	80.5 (277)	83.1 (74)	91.5 (118)	69.8 (178)	88.2 (67)	70.8 (46)
Non-UK	1.6 (4)	42.4 (25)	19.5 (67)	16.9 (15)	8.5 (11)	30.2 (77)	11.8 (9)	29.2 (19)
Length of time in UK								
All of Participant's Life	98.0 (243)	52.5 (31)	73.0 (251)	77.5 (69)	85.3 (110)	65.5 (167)	82.9 (63)	64.6 (42)
Over 10 years	0.8 (2)	10.2 (6)	17.7 (61)	9.0 (8)	7.0 (9)	10.6 (27)	11.8 (9)	6.2 (4)
Less than 10 years	1.2 (3)	37.3 (22)	9.3 (32)	13.5 (12)	7.8 (10)	23.9 (61)	5.3 (4)	29.2 (19)
SDQ Case								
Case	11.7 (29)	6.8 (4)	8.1 (28)	7.9 (7)	3.9 (5)	3.9 (10)	10.5 (8)	6.2 (4)
Not a Case	88.3 (219)	93.2 (55)	91.9 (316)	92.1 (82)	96.1 (124)	96.1 (245)	89.5 (68)	93.8 (61)
MFQ Case								
Case	15.7 (39)	20.3 (12)	22.1 (76)	20.2 (18)	22.5 (29)	11.0 (28)	27.6 (21)	16.9 (11)
Not a Case	84.3 (209)	79.7 (47)	77.9 (268)	79.8 (71)	77.5 (100)	89.0 (227)	72.4 (55)	83.1 (54)

4.4 Correspondence between MFQ Caseness at Follow-up and Emotional Symptoms Caseness from the SDQ at Follow-up.

The two mental health measures, the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1994) and the Moods and Feelings Questionnaire (MFQ; Angold, 1997), measured different aspects of psychological distress. As described in the Methods chapter of the thesis, the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1994) is designed to measure an overall score of psychological distress. On the other hand, the Moods and Feelings Questionnaire (MFQ; Angold, 1997) is a more specific measure of depressive symptoms. One way to examine the correspondence of these outcomes measures, is to compare the prevalence of MFQ caseness at follow-up with the prevalence of emotional symptoms caseness from the emotional symptoms subscale of the SDQ. Table 4.4 below displays the prevalence of the emotional symptoms subscale of the SDQ at follow-up and the prevalence of MFQ caseness at follow-up by ethnicity. 18.5% of pupils were defined as MFQ cases at follow-up and 16.2% of pupils were defined as cases on the emotional symptoms subscale of the SDQ. When the prevalence of 'caseness' for the MFQ at follow-up and the emotional symptoms subscale of the SDQ were stratified by ethnicity, there were very similar levels of prevalence amongst White UK, White non-UK, Black, and pupils defined as belonging to the 'Other' ethnic group. On the other hand, there were higher levels of MFQ caseness compared with emotional symptoms caseness of the SDQ subscale amongst pupils identified as Pakistani, Asian Indian, Bangladeshi, and Mixed Race pupils. These differences in prevalence of 'caseness' between the MFQ at follow-up and the emotional symptoms subscale of the SDQ at follow-up raise the question as to whether the SDQ and MFQ measure the same constructs across all ethnic groups in this study. This issue will be discussed further in the Discussion chapter of the Thesis.

Table 4.4 Prevalence of Emotional Symptoms Subscale caseness and MFQ caseness at follow-up stratified by ethnicity

Ethnicity (N)	Percentage (N) Emotional Symptoms Subscale caseness at Follow-up	Percentage (N) MFQ caseness at follow-up
White UK (248)	16.9 (42)	15.7 (39)
White non-UK (59)	18.6 (11)	20.3 (12)
Bangladeshi (344)	18.3 (63)	22.1 (76)
Pakistani (89)	14.6 (13)	20.2 (18)
Asian Indian (129)	16.3 (21)	22.5 (29)
Black (255)	11.0 (28)	11.0 (28)
Mixed Race (76)	21.1 (16)	27.6 (21)
Other (65)	16.9 (11)	16.9 (11)
All Ethnic Groups (1265)	16.2 (205)	18.5 (234)

4.5 Exploratory Analyses Presenting Ethnic Variations in Psychological Distress and Depressive Symptoms at Follow-up

For the overall sample (N = 1265), 7.5% (N = 95) of pupils were defined as SDQ Cases at follow-up and 18.5% (N = 234) of pupils were defined as MFQ Cases at follow-up.

Figure 4.2 displays the percentage of pupils defined as SDQ cases at follow-up in each ethnic group. A test of general association between ethnicity and psychological distress or depressive symptoms at follow-up was conducted to test overall heterogeneity between ethnicity and mental health outcomes. Cramer's V test of association suggests there was no statistical difference between the percentage of SDQ caseness reported and the pupils' ethnicity in this sample. On the other hand, there was evidence for an association between ethnicity and the percentage of MFQ caseness across ethnic groups. Figure 4.3 displays the percentage of pupils defined as MFQ cases at follow-up in each ethnic group.

Figure 4.2 Percentage of SDQ Cases Within Each Ethnic Group

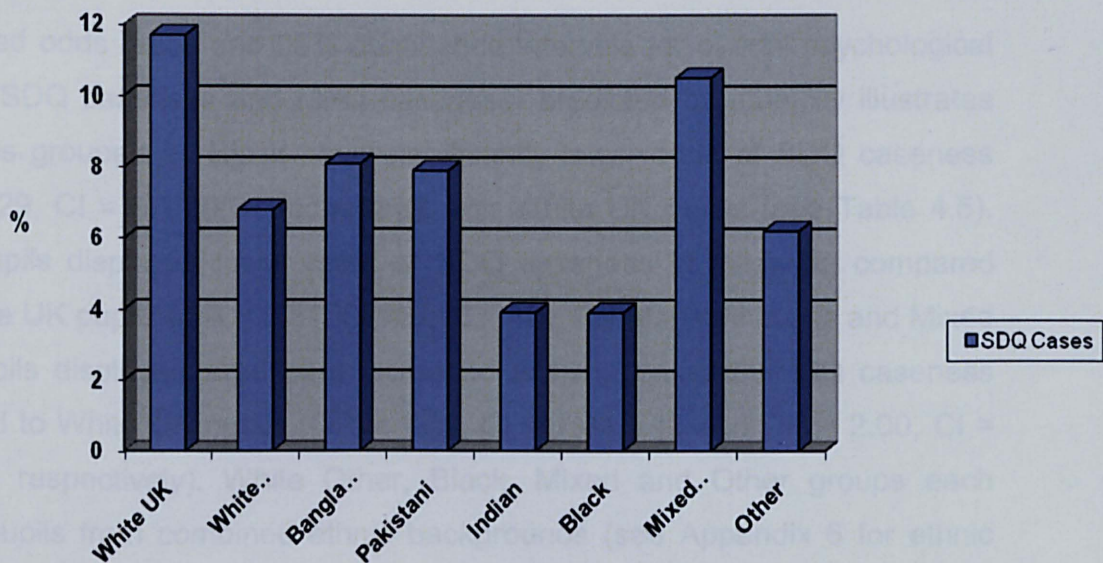
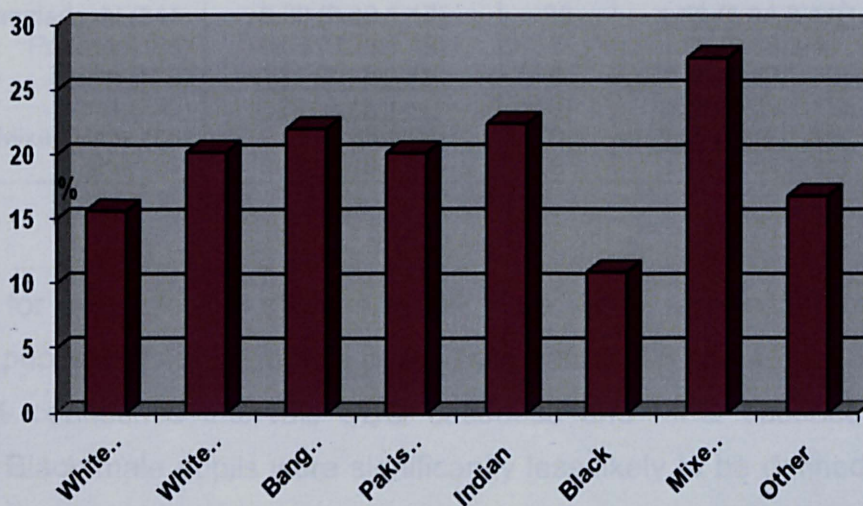


Figure 4.3 Percentage of MFQ Cases Within Each Ethnic Group



Unadjusted odds ratios and 95% confidence intervals for overall psychological distress (SDQ caseness and MFQ caseness) predicted by ethnicity illustrates that pupils grouped as Black have significantly lower odds of SDQ caseness (OR = 0.29, CI = 0.13,0.61) compared with White UK pupils (see Table 4.5). Indian pupils displayed lower rates of SDQ caseness at follow-up compared with White UK pupils (OR = 0.31, CI = 0.12,0.82). Bangladeshi pupils and Mixed Race pupils displayed significant increased associations with MFQ caseness compared to White UK pupils (OR = 1.59, CI = 1.04,2.43 and OR = 2.00, CI = 1.08,3.68 respectively). White Other, Black, Mixed and Other groups each contain pupils from combined ethnic backgrounds (see Appendix 6 for ethnic composition of pupils in combined groups).

Table 4.5 Odds Ratios and 95% Confidence Intervals for Psychological Distress and Depressive Symptoms by 8 Ethnic Groups at Follow-up

Ethnicity	Odds Ratios and 95% CI for SDQ Caseness	N for SDQ Caseness	Odds Ratios and 95% CI for MFQ Caseness	N for MFQ Caseness
White UK (248)	1	29	1	39
White Non-UK (59)	0.65 (0.24,1.77)	4	1.39 (0.68,2.82)	12
Bangladeshi (344)	0.68 (0.40,1.17)	28	<u>1.59 (1.04,2.43)*</u>	79
Pakistani (89)	0.60 (0.25,1.45)	7	1.28 (0.68,2.41)	18
Indian (129)	<u>0.31 (0.12,0.82)*</u>	5	1.50 (0.87,2.59)	29
Black (255)	<u>0.29 (0.13,0.61)*</u>	10	0.67 (0.39,1.12)	28
Mixed Race (76)	0.82 (0.35,1.91)	8	<u>2.00 (1.08,3.68)*</u>	21
Other (65)	0.46 (0.15,1.38)	8	1.12 (0.54,2.31)	11

* p < 0.05

The risk for psychological distress at follow up varies significantly by ethnicity for male pupils, but not for female pupils (see Tables 4.6 and 4.7 for odds ratios and 95% confidence intervals SDQ caseness and MFQ caseness split by gender). Black male pupils were significantly less likely to be defined as either an SDQ Case or MFQ Case at follow-up (OR = 0.15, CI = 0.03, 0.69 and OR = 0.21, CI = 0.06, 0.74 respectively). Mixed Race male pupils were significantly

more likely to be defined as an MFQ Case at follow-up (OR = 2.55, CI = 1.02, 6.36). A loss of significance for lower levels of psychological distress for Indian pupils and higher levels of depressive symptoms for Bangladeshi pupils was apparent when analyses were split by gender and this may be due to a loss of power to detect a significant difference due to few numbers.

Table 4.6 Odds Ratios and 95% Confidence Intervals for Psychological Distress and Depressive Symptoms by 8 Ethnic Groups for Male Pupils

Ethnicity For Males (N = 651)	Odds Ratios and 95% CI for SDQ Caseness (N)	N for SDQ Caseness	Odds Ratios and 95% CI for MFQ Caseness	N for MFQ Caseness
White UK (128)	1	13	1	29
White Non-UK (32)	0.42 (0.08,2.29)	2	0.82 (0.23,2.90)	4
Bangladeshi (190)	0.71 (0.33,1.51)	15	1.57 (0.83,2.99)	28
Pakistani (57)	0.66 (0.21,2.06)	4	1.29 (0.53,3.18)	7
Indian (63)	0.12 (0.01,1.10)	1	1.62 (0.69,3.78)	5
Black (111)	<u>0.15 (0.03,0.69)*</u>	2	<u>0.21 (0.06,0.74)*</u>	10
Mixed Race (36)	0.38 (0.08,2.03)	2	<u>2.55 (1.02,6.36)*</u>	8
Other (34)	No Cases	0	1.72 (0.63,4.71)	8

* p < 0.05

Table 4.7 Odds Ratios and 95% Confidence Intervals for Psychological Distress and Depressive Symptoms by 8 Ethnic Groups for Female Pupils

Ethnicity For Females (N = 614)	Odds Ratios and 95% CI for SDQ Caseness (N)	N for SDQ Caseness	Odds Ratios and 95% CI for MFQ Caseness (N)	N for MFQ Caseness
White UK (120)	1 (16)	16	1	24
White Non-UK (27)	0.89 (0.25,3.14) (2)	2	1.95 (0.79,4.80)	8
Bangladeshi (154)	0.66 (0.31,1.44) (13)	13	1.72 (0.97,3.05)	43
Pakistani (32)	0.54 (0.13,2.29) (3)	3	1.51 (0.61,3.75)	9
Indian (66)	0.45 (0.15,1.39) (4)	4	1.37 (0.67,2.80)	18
Black (144)	0.37 (0.15,0.92) (8)	8	0.85 (0.46,1.60)	25
Mixed Race (40)	1.19 (0.43,3.32) (6)	6	1.61 (0.71,3.67)	11
Other (31)	0.93 (0.28,3.07) (4)	4	0.73 (0.25,2.14)	5

* p < 0.05

A trend emerging from these analyses so far, is that, compared to White UK pupils, pupils from the seven other ethnic groups generally report lower levels of SDQ caseness. On the other hand, these groups were more likely to report MFQ caseness compared with White UK pupils. The MFQ is indicative of depressive and internalizing symptoms, whereas, the SDQ includes subscales

to measure externalizing symptoms. Regression models to predict odds ratios and 95% confidence intervals for 2 subscales of the SDQ (conduct disorder and emotional symptoms) were carried out (see Table 4.8). White Non-UK pupils and Indian pupils were significantly less likely to be defined as an SDQ case at follow-up. Compared with White UK pupils, none of the seven ethnic groups reported significantly higher levels of emotional symptoms.

Table 4.8 Odds Ratios and 95% Confidence Intervals for Conduct Disorder SDQ Subscale Caseness and Emotional Symptoms SDQ Subscale Caseness Predicted by Ethnicity

Ethnicity (N = 1265)	Odds Ratios and 95% CI for Conduct Disorder SDQ Subscale Caseness	N for SDQ Conduct Disorder Subscale	Odds Ratios and 95% CI for Emotional Symptoms SDQ Subscale Caseness	N for SDQ Emotional Disorder Subscale
White UK (248)	1	63	1	42
White Non-UK (59)	<i>0.38 (0.17,0.87)*</i>	7	1.17 (0.57,2.39)	11
Bangladeshi (344)	0.86 (0.59,1.25)	83	1.08 (0.70,1.65)	63
Pakistani (89)	1.17 (0.68,2.01)	27	0.74 (0.37,1.50)	13
Indian (129)	<i>0.33 (0.18,0.62)**</i>	14	0.91 (0.51,1.63)	21
Black (255)	0.76 (0.51,1.16)	57	0.62 (0.37,1.04)	28
Mixed Race (76)	1.28 (0.73,2.25)	25	1.25 (0.65,2.39)	16
Other (65)	0.52 (0.25,1.06)	11	1.04 (0.51,2.13)	11

4.5.1 Section Summary

This section found that ethnic variations in psychological distress and depressive symptoms are apparent. Compared with White UK pupils, a trend was apparent where all other ethnic groups were less likely to be defined as SDQ Cases at follow-up, but more likely to be defined as an MFQ Case at follow-up. Splitting the analyses by gender may have resulted in a loss of power to detect significant ethnic variations in psychological distress and depressive symptoms.

The following section investigates whether there are ethnic variations in social support at baseline and it may be the case that those groups reporting higher levels of psychological distress at follow-up are also reporting low levels of social support. In a similar vein, it is worth investigating whether those groups reporting low levels of psychological distress such as Black pupils are also reporting high levels of social support compared with other ethnic groups.

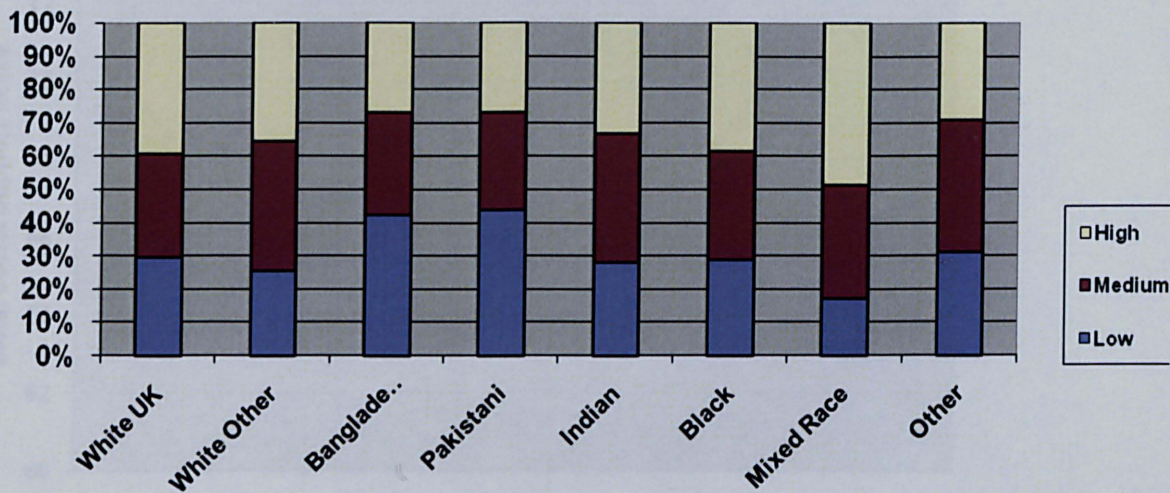
4.6 Ethnic variations in Levels of Social Support at Baseline

One of the main aims of this chapter is to establish whether baseline social support can account for ethnic variations in psychological distress and depressive symptoms at follow-up. Previous analyses from this chapter highlighted that Indian and Black pupils reported significantly lower levels of psychological distress at follow-up compared with White UK pupils. This section presents information regarding ethnic variations in social support in the RELACHS sample. It may be a possibility that those groups reporting lower levels of psychological distress (Indian and Black pupils) report higher levels of baseline social support. Previous analyses from this chapter also highlighted that Bangladeshi and Mixed Race pupils reported significantly higher levels of depressive symptoms at follow-up compared with White UK pupils. It may also be a possibility that those groups reporting higher levels of depressive symptoms (Bangladeshi and Mixed Race pupils) report lower levels of social support compared with White UK pupils. Hypothesis 1 will address whether low baseline social support can account for ethnic variations in psychological distress and depressive symptoms at follow-up.

4.6.1 Testing for an Association between Ethnicity and Social Support

Figure 4.4 displays the percentage of pupils reporting low, medium or high levels of overall baseline social support in each ethnic group. A test of general association between ethnicity and social support at baseline was conducted to test overall heterogeneity between ethnicity and social support. Cramer's V test of association suggests there was a significant association between tertiles of social support and the pupils' ethnicity in this sample.

Figure 4.4 Stacked Column Graph Representing the Distribution of Total Social Support Tertiles by Ethnicity



4.6.2 Describing Levels of Social Support at Baseline by Ethnic Group

Figures 4.5 – 4.8 display mean level of social support split by ethnicity (total and subscales of the MSPSS respectively). Figure 4.5 below displays mean Total Support at by Ethnicity. Mixed Race pupils reported the highest levels of total social support at baseline, whereas Bangladeshi and Pakistani pupils reported the lowest levels of support. Multivariate analysis of variance tested whether there were significant differences between the ethnic groups on the level of social support reported at baseline. There were significant differences in the level of overall social support reported at baseline between ethnic groups ($F=5.91$, $p < 0.001$). Tukey HSD post hoc analysis revealed significant

differences in mean level of overall support at baseline between four pairs of ethnic groups: White UK and Bangladeshi pupils; Bangladeshi and Black pupils; Bangladeshi and Mixed Race Pupils; Pakistani and Mixed Race Pupils (see Figure 4.5).

Figure 4.5 Mean Level of Total Support at Baseline by Ethnicity

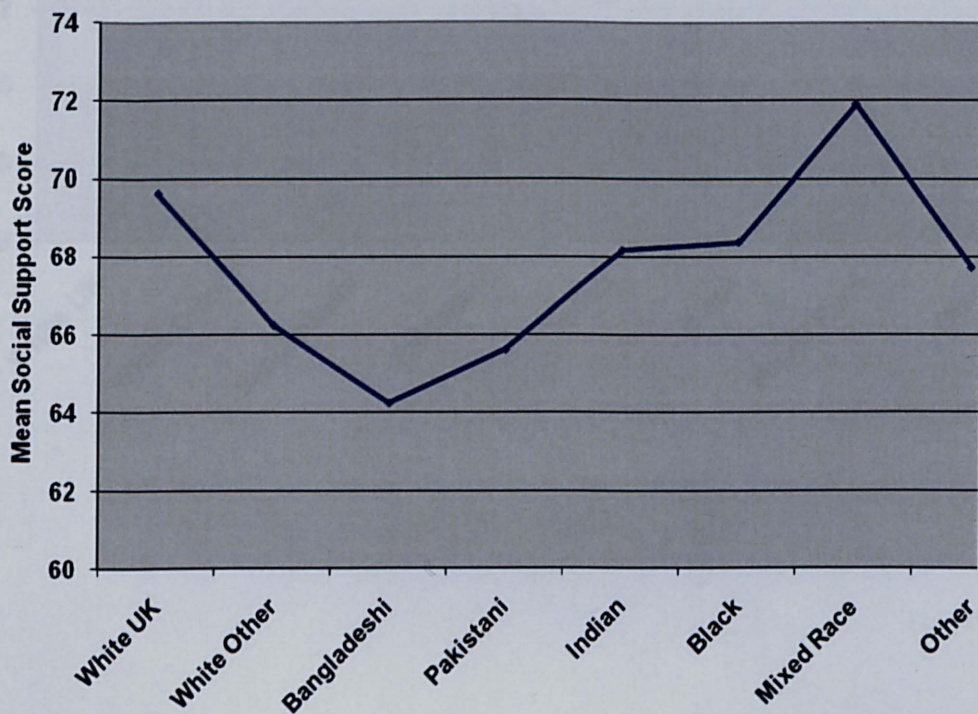


Figure 4.6 below displays means of friend Support at baseline by Ethnicity. There were significant differences in the level of friend support reported at baseline between ethnic groups ($F=4.02$, $p < 0.01$). Tukey HSD post hoc analysis revealed significant differences in mean level of friend support between White Other and Indian Pupils.

Figure 4.6 Mean Level of Friend Support at Baseline by Ethnicity

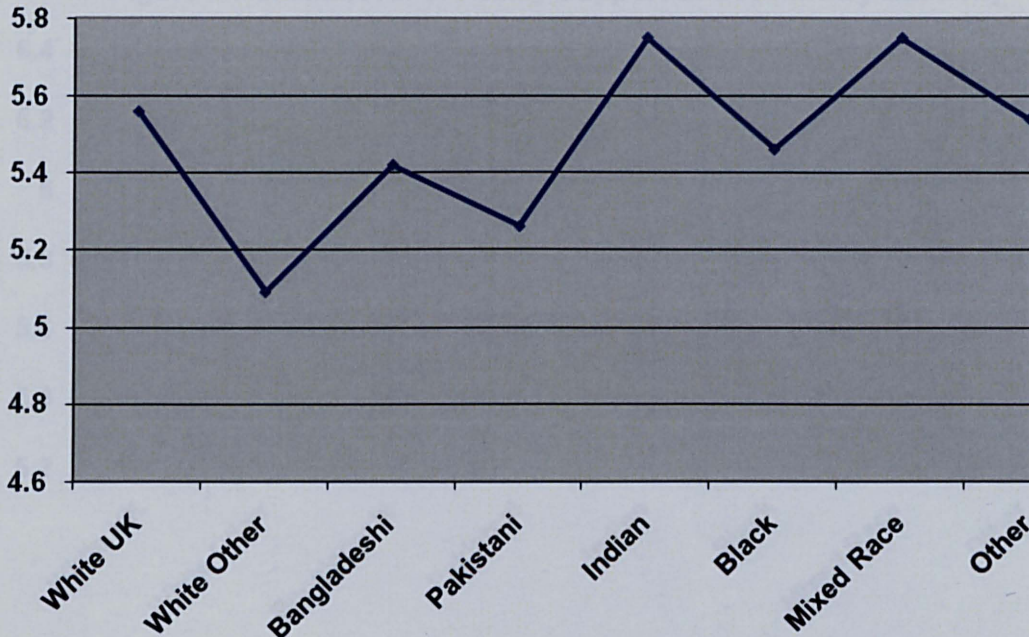
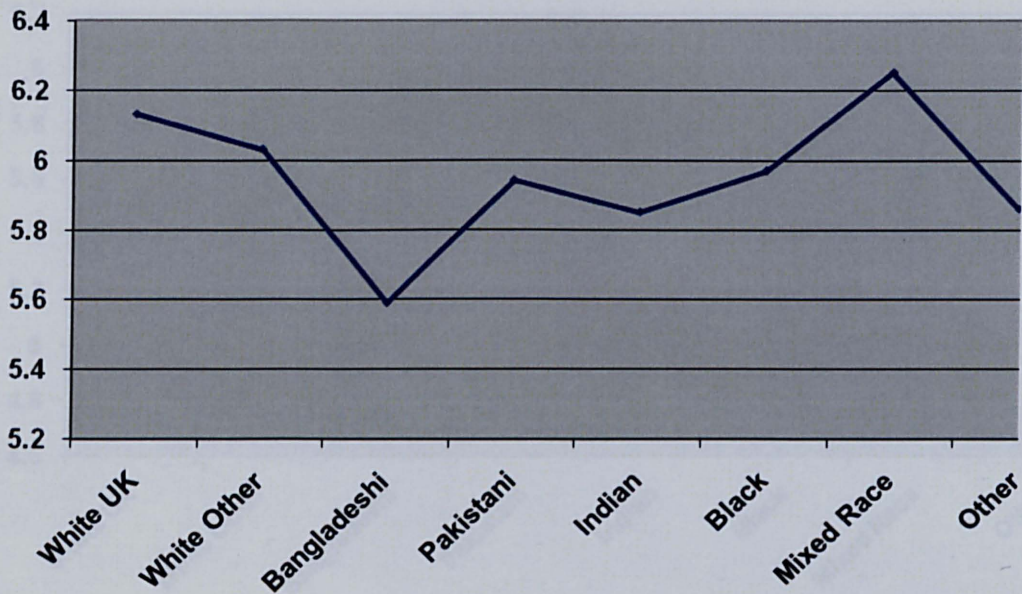


Figure 4.7 below displays estimated marginal means of Family Support at baseline by ethnicity. There were significant differences in the level of family support reported at baseline between ethnic groups ($F=7.54$, $p < 0.01$). Tukey HSD post hoc analysis revealed significant differences in mean level of family support at baseline between 3 pairs of ethnic groups: White UK and Bangladeshi pupils; Bangladeshi and Black pupils; Bangladeshi and Mixed Race pupils.

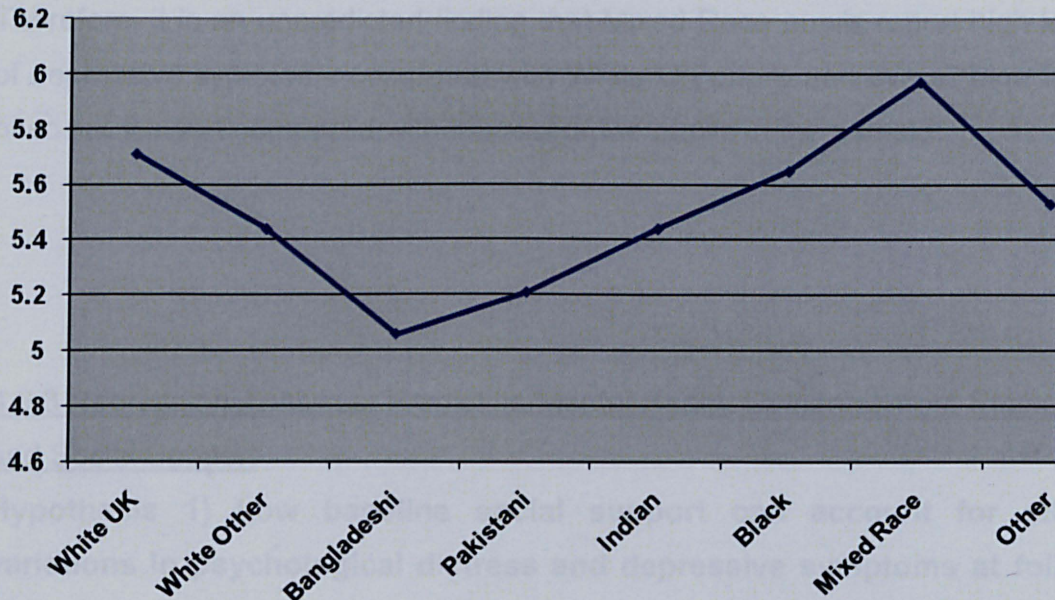
Figure 4.7 Mean Level of Family Support at Baseline by Ethnicity



Analyses in this section have provided interesting findings regarding ethnic variations in levels of perceived social support. These analyses have illustrated that there are significant differences in levels of social support (total and subscales) by ethnic group between the ethnic groups. All four main

Figure 4.8 below displays estimated marginal means of Special Person Support at baseline by ethnicity. There were significant differences in the level of special person support reported at baseline between ethnic groups ($F=7.35, p < 0.01$). Tukey HSD post hoc analysis revealed significant differences in mean level of special person support at baseline between four pairs of ethnic groups: White UK and Bangladeshi pupils; Bangladeshi and Black pupils; Bangladeshi and Mixed Race pupils; Mixed Race and Pakistani pupils.

Figure 4.8 Mean Level of Special Person Support at Baseline by Ethnicity



Analyses in this section have provided interesting findings regarding ethnic variations in levels of baseline social support. These analyses have illustrated that there are significant differences in levels of social support (total and subscales) at baseline between the ethnic groups. Although there were significant differences in levels of social support (total and subscales), Indian pupils and Black pupils did not report higher levels of social support for any of the MSPSS subscales compared with White UK pupils.

There was evidence for lower levels of total, family subscale and special person subscale of the MSPSS for Bangladeshi pupils compared with White UK pupils. It may therefore be the case that higher levels of depressive symptoms reported by Bangladeshi pupils at follow-up compared with White UK pupils are

explained by lower levels of family and special person support for Bangladeshi pupils. On the other hand, lower levels of social support compared with White UK pupils were not evident for Mixed Race pupils. Mixed race pupils generally reported high levels of social support (though not significantly different levels of support compared with White UK pupils). Therefore, it is an unpredicted finding that Mixed Race pupils report high levels of depressive symptoms compared with White UK pupils and overall high levels of social support compared with the rest of the pupils in the sample.

4.6.3 Regression Analyses: Predicting Mental Health Outcomes from Ethnicity and Social Support

Hypothesis 1) Low baseline social support can account for ethnic variations in psychological distress and depressive symptoms at follow-up.

Hypothesis 2) Low family social support at baseline is significantly associated with depressive symptoms at follow-up.

Analyses in this section present logistic regression models to predict SDQ caseness or MFQ caseness by social support, ethnicity and mutually adjusted social support and ethnicity. These analyses will address Hypotheses 1 and 2 of the chapter: whether low baseline social support can account for ethnic variations in psychological distress and depressive symptoms at follow-up; whether low family social support at baseline is significantly associated with depressive symptoms at follow-up.

Table 4.9 displays Odds ratios and 95% confidence intervals for SDQ caseness at follow-up. The unadjusted associations in Table 4.9 are the same as odds ratios and 95% confidence intervals presented earlier in this chapter, but are presented below to compare unadjusted associations with adjusted associations. There were no significant associations between social support

and SDQ caseness. Furthermore, protective effects for SDQ caseness at follow-up for Asian Indian and Black pupils were sustained when baseline support was entered into the model. Therefore social support did not account for lower levels of SDQ caseness at follow-up reported by Indian and Black pupils.

Table 4.9 Odds Ratios and Confidence Intervals for SDQ Caseness at follow-up Predicted by Baseline Social Support Scores; Ethnicity; Adjusted Baseline Social Support Scores and Ethnicity.

	SDQ caseness Phase II		
	Unadjusted Social Support Odds Ratio For SDQ Caseness	Unadjusted Ethnicity Odds Ratio For SDQ Caseness	Social Support and Ethnicity Odds Ratios For SDQ Caseness
Friends			
High SS (456)	1		1
Medium SS (352)	0.91 (0.52,1.58)		0.94 (0.53,1.64)
Low SS (457)	1.29 (0.80,2.09)		1.31 (0.80,2.13)
Family			
High SS (441)	1		1
Medium SS (433)	1.15 (0.67,1.95)		1.23 (0.72,2.11)
Low SS (391)	1.53 (0.92,2.57)		1.67 (0.98,2.84)
Special Person			
High SS (468)	1		1
Medium SS (363)	0.94 (0.56,1.59)		0.91 (0.54,1.54)
Low SS (434)	0.99 (0.60,1.62)		0.98 (0.59,1.63)
Total Social Support			
High SS (435)	1		1
Medium (416)	1.08 (0.63,1.84)		1.11 (0.65,1.91)
Low SS (414)	1.44 (0.87,2.40)		1.46 (0.87,2.46)
Ethnicity			
White UK (248)		1	1
White Non-UK (59)		0.65 (0.24,1.77)	0.66 (0.24,1.80)
Bangladeshi (344)		0.68 (0.40,1.17)	0.65 (0.38,1.12)
Pakistani (89)		0.60 (0.25,1.45)	0.56 (0.23,1.37)
Asian Indian (129)		<u>0.31 (0.12,0.82)</u>	<u>0.31 (0.12,0.82)</u>
Black (255)		<u>0.29 (0.13,0.61)</u>	<u>0.28 (0.13,0.61)</u>
Mixed Race (76)		0.82 (0.35,1.91)	0.85 (0.36,1.99)
Other (65)		0.46 (0.15,1.38)	0.45 (0.15,1.37)

*<0.05

In a similar vein, adjustment for social support did not alter higher levels of depressive symptoms at follow-up for Bangladeshi and Mixed Race pupils (see Table 4.10). A low level of family support was a risk factors for depressive symptoms at follow-up in the adjusted model.

Table 4.10 Odds Ratios and Confidence Intervals for MFQ Caseness at Phase II from baseline social support scores; ethnicity; adjusted baseline social support scores and ethnicity.

	MFQ caseness Phase II		
	Unadjusted Social Support Odds Ratio For MFQ Caseness	Unadjusted Ethnicity Odds Ratio For MFQ Caseness	Social Support and Ethnicity Odds Ratios For MFQ Caseness
Friends			
High SS (456)	1		1
Medium SS (352)	0.95 (0.66,1.37)		0.94 (0.65,1.36)
Low SS (457)	1.18 (0.85,1.65)		1.21 (0.87,1.70)
Family			
High SS (441)	1		1
Medium SS (433)	1.35 (0.94,1.94)		1.31 (0.90,1.89)
Low SS (391)	<u>1.96 (1.37,2.80)</u>		<u>1.91 (1.33,2.76)</u>
Special Person			
High SS (468)	1		1
Medium SS (363)	1.21 (0.85,1.72)		1.18 (0.83,1.68)
Low SS (434)	1.03 (0.73,1.45)		0.97 (0.68,1.37)
Total Social Support			
High SS (435)	1		1
Medium (416)	1.22 (0.86,1.74)		1.20 (0.84,1.71)
Low SS (414)	1.24 (0.87,1.77)		1.20 (0.84,1.72)
Ethnicity			
White UK (248)		1	1
White Non-UK (59)		1.39 (0.68,2.82)	1.39 (0.68,2.82)
Bangladeshi (344)		<u>1.59 (1.04,2.43)</u>	<u>1.56 (1.02,2.38)</u>
Pakistani (89)		1.28 (0.68,2.41)	1.25 (0.66,2.35)
Asian Indian (129)		1.50 (0.87,2.59)	1.49 (0.87,2.57)
Black (255)		0.67 (0.39,1.12)	0.66 (0.39,1.12)
Mixed Race (76)		<u>2.00 (1.08,3.68)</u>	<u>2.02 (1.10,3.73)</u>
Other (65)		1.12 (0.54,2.31)	1.10 (0.53,2.27)

4.6.4 Section Summary

Although ethnic variations in mental health outcomes at follow-up were apparent, adjustment for social support could not explain these variations. Therefore there is no evidence to support Hypothesis 1.

Hypothesis 2 predicted that low family social support at baseline is significantly associated with depressive symptoms at follow-up. This hypothesis was supported. There are significant associations between low levels of family support at baseline and depressive symptoms at follow-up. Compared with cross-sectional associations between social support and psychological distress (Klineberg *et al.*, 2006), associations between friend support and overall support with depressive symptoms were not found. Neither did these analyses find a significant association between total social support and SDQ caseness. Exclusion of baseline SDQ or MFQ 'cases' in the current analyses may be a factor responsible for this difference, or the possibility that friend support or special person support are not risk factors for SDQ caseness or MFQ caseness in these analyses.

4.7 The Association between Additional Covariate Variables with Mental Health Outcomes

The analyses so far have assumed that the nature of the association between support and mental health outcomes and ethnicity and psychological distress or depressive symptoms is based on a linear association. Analyses in this section firstly explores whether additional covariate variables are associated with mental health outcomes. Subsequent analyses investigate interaction effects between social support and gender predicting mental health outcomes.

Table 4.11 displays unadjusted odds ratios and 95% confidence intervals for SDQ caseness and MFQ caseness predicted by covariate variables. Year 7 pupils reported higher rates of SDQ caseness at follow-up compared with Year

9 pupils (OR = 1.58, 95% CI = 1.04, 2.41). Pupils reporting maternal employment reported higher rates of SDQ caseness (OR = 3.41, 95% CI = 1.75,6.68). Male pupils were less likely to be defined as an MFQ case compared with female pupils (OR = 0.54, 95% CI 0.40, 0.72). Pupils reporting both parents unemployed or paternal employment only displayed a higher rate of MFQ caseness at follow-up compared with pupils whose parents were both employed (OR = 1.49, 95% CI 1.03,2.16 and OR = 1.50, 95% CI 1.01,2.23 respectively).

On the basis of the findings reported in Table 4.11, year group and parental employment are covariates to be entered into adjusted regression models investigated at the end of this chapter. Although the additional variables in Table 4.11 were not significantly associated with SDQ or MFQ caseness for univariate analyses, country of birth and length of time in the UK are considered to be proxy indicators of acculturative style and therefore these variables will be included in adjusted analyses. Furthermore, free school meals (a measure of household income) and parental ownership of vehicle (a measure of socio-economic status) will be included in adjusted analyses.

Table 4.11 Unadjusted Odds Ratios (95% Confidence Intervals) for Psychological Distress and Depressive Symptoms Predicted by Covariate Variables

Covariate	OR (95% CI) Unadjusted for SDQ Caseness	OR (95% CI) Unadjusted for MFQ caseness
Year Group at Baseline		
Year 9 (640)	1	1
Year 7 (625)	1.58 (1.04,2.41)*	0.86 (0.64,1.14)
Parental Employment		
Both employed (374)	1	1
Not employed (429)	1.71 (0.93,3.16)	1.49 (1.03,2.16)*
Mother employed (155)	3.41 (1.75,6.68)*	1.14 (0.68,1.89)
Father employed (307)	1.86 (0.98,3.54)	1.50 (1.01,2.23)*
Country of Birth		
Non-UK (227)	1	1
UK (1038)	1.43 (0.78,2.62)	1.28 (0.87,1.89)
Parental Ownership of Vehicle		
Two or More (257)	1	1
None (360)	1.46 (0.76,2.78)	1.05 (0.68,1.60)
One (648)	1.35 (0.74,2.47)	1.20 (0.68,1.60)
Length of Time in UK		
Less than 10yrs (163)	1	1
All of Participant's Life (976)	2.25 (0.97,5.22)	1.23 (0.78,1.93)
Over 10 years (126)	2.11 (0.75,5.96)	1.21 (0.66,2.23)
Free School Meals		
Eligible (628)	1	1
Not Eligible (637)	0.91 (0.60,1.38)	0.98 (0.74,1.30)

*p<0.05 **p<0.01

4.8 The Association between Gender and Mental Health Outcomes

Hypothesis 3) There is an interaction between social support and gender predicting psychological distress and depressive symptoms.

The literature addressed in Chapter 2 suggests that the association between social support and psychological distress varies by gender as well as ethnicity. This sub-section explores the association between gender and mental health outcomes at follow-up.

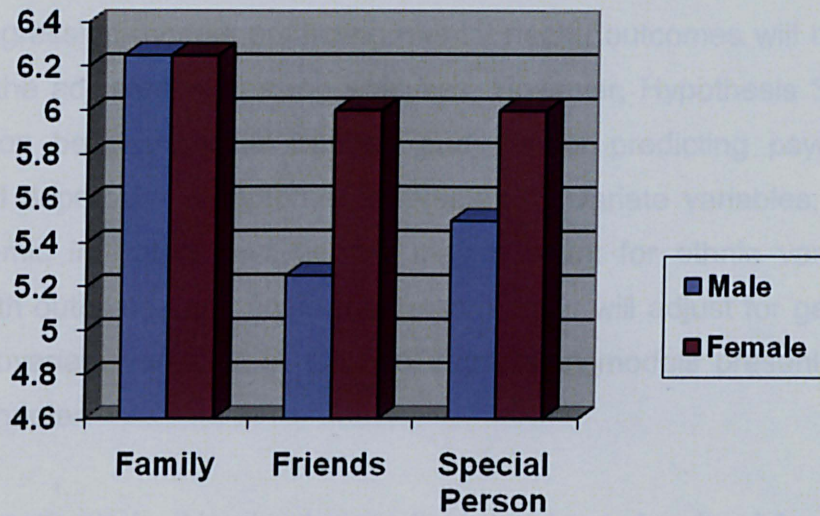
A significant association between gender and SDQ caseness at follow-up was not apparent (see Table 4.12), yet male pupils were significantly less likely to be defined as an MFQ case at follow-up (OR= 0.54, 95% CI 0.40,0.72). Female pupils displayed higher levels of friend support and special person support at baseline compared with male pupils (see Figure 4.9)

Table 4.12 Unadjusted Odds Ratios and 95% Confidence Intervals to Predict Mental Health Outcomes by Gender

Covariate		OR (95% CI) Unadjusted for SDQ Caseness	OR (95% CI) Unadjusted for MFQ caseness
Gender	Female (614)	1	1
	Male (651)	0.66 (0.43,1.01)	<i>0.54 (0.40,0.72)*</i>

*p<0.05

Figure 4.9 Median Baseline Social Support Subscales Split by Gender



There was no evidence for an interaction between social support (total or subscales) and gender and the association with MFQ caseness or SDQ caseness at follow-up in logistic regression models (analyses not reported). However, given the finding that a gender difference is apparent in self-report levels of depressive symptoms at follow-up and higher scores of friends and special person support for female pupils, the remaining regression analyses investigating prospective associations between social support and mental health outcomes are split by gender. Gender differences in levels of social support and psychological distress have been noted elsewhere (Canty-Mitchell and Zimet., 2000; Prescott-Clarke and Primatesta, 1998). Although stratifying the remaining analyses by gender will compromise the power of the findings, gender differences in both predictor and outcome variables warrant stratifying analyses by gender.

4.8.1 Section Summary

Analyses from this section investigated whether there was an interaction between social support and gender in the prediction were predictive of

depressive symptoms. The association between additional covariate variables and mental health outcomes were also investigated. Gender differences are apparent in levels of social support at baseline, with female pupils reporting higher levels of friend and special person social support, furthermore, male pupils report significantly lower levels of depressive symptoms at follow-up and therefore regression models predicting mental health outcomes will be split by gender for the adjusted regression analyses. However, Hypothesis 3 (there is an interaction between social support and gender predicting psychological distress and depressive symptoms) is rejected. Covariate variables, including socio-economic indicators and gender may account for ethnic variations in mental health outcomes and final regression models will adjust for gender and additional covariate variables in the final regression models presented at the end of the chapter.

The final hypothesis in this chapter predicts that lower levels of family social support have an adverse effect (greater levels of psychological distress or depressive symptoms) on Bangladeshi pupils compared with White UK pupils and Black pupils. Given the finding from this data that low levels of baseline family support are associated with depressive symptoms and the speculation in the literature that certain minority groups may experience adverse effects from low family support, Hypothesis 4 aims to explore interaction effects between social support and ethnicity predicting mental health outcomes. Due to small numbers, the three largest groups only (White UK, Asian Bangladeshi and Black) were selected for further analysis.

4.9 Exploring an Interaction Effect between Social Support and Ethnicity Predicting Mental Health Outcomes

Hypothesis 4) Lower levels of family social support have an adverse effect (greater levels of psychological distress or depressive symptoms) on Bangladeshi pupils compared with White UK pupils and Black pupils.

For the three largest ethnic groups, an interaction between social support (subscales and total) and ethnicity predicting SDQ caseness was not apparent.

However, evidence of an interaction between friends social support and ethnicity predicting MFQ caseness was apparent: where medium levels of friends' social support had an adverse effect on depressive symptoms for Bangladeshi pupils (OR=3.33, 95% CI 1.02,10.88), but not for White UK or Black pupils. Odds ratios and 95% confidence intervals for the interaction between baseline social support (total MSPSS score and subscales of the MSPSS) and ethnicity predicting mental health outcomes (SDQ or MFQ caseness at follow-up) are presented in Appendix 7).

Presence of an interaction between friends' social support at baseline and ethnicity will be adjusted for in regression analyses presented below.

4.10 Adjusted Regression Models

This final section presents fully adjusted regression models to take into consideration the presence of covariate variables in the association between social support and mental health outcomes such as socio-economic status and the interaction between social support and ethnicity predicting depressive symptoms. Adjusted regression models were built in stages, where Figure 4.10 illustrates the stages at which variables were added to each model. This approach was taken so that it is possible to identify the effects of adding variables to each model. Furthermore, analyses in this section are split by gender.

Figure 4.10 Diagram to Illustrate How Adjusted Regression Models Were Built

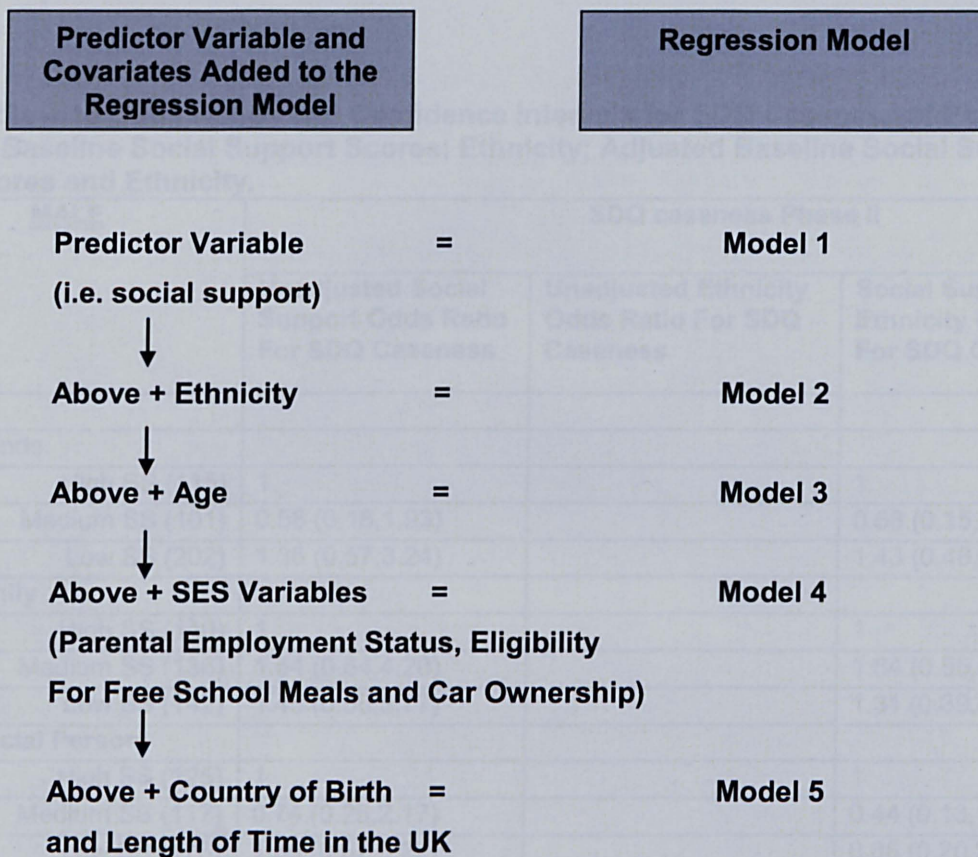


Table 4.13 displays odds ratios and 95% confidence intervals for SDQ caseness for male pupils predicted by unadjusted social support and ethnicity and fully adjusted models. There was no association between social support and SDQ caseness in unadjusted or adjusted models. Black pupils reported significantly lower levels of SDQ caseness at follow-up in unadjusted (OR = 0.09, 95% CI = 0.01,0.67) and adjusted models (OR = 0.08, 95% CI = 0.01,0.66). Bangladeshi males displayed a significantly lower risk of SDQ caseness once socio-economic indicators were entered into the regression model.

Social support was not associated with SDQ caseness for female pupils (see Table 4.14). However, Black female pupils reported significantly lower levels of

psychological distress compared with White UK female pupils (OR = 0.28, 95% CI = 0.10,0.84).

Table 4.13 Odds Ratios and Confidence Intervals for SDQ Caseness at Phase II by Baseline Social Support Scores; Ethnicity; Adjusted Baseline Social Support Scores and Ethnicity.

MALE	SDQ caseness Phase II		
	Unadjusted Social Support Odds Ratio For SDQ Caseness	Unadjusted Ethnicity Odds Ratio For SDQ Caseness	Social Support and Ethnicity Odds Ratios For SDQ Caseness*
Friends			
High SS (115)	1		1
Medium SS (101)	0.58 (0.18,1.93)		0.58 (0.15,2.17)
Low SS (202)	1.36 (0.57,3.24)		1.43 (0.46,4.46)
Family			
High SS (140)	1		1
Medium SS (136)	1.64 (0.64,4.20)		1.64 (0.55,4.85)
Low SS (142)	1.45 (0.56,3.77)		1.31 (0.39,4.38)
Special Person			
High SS (125)	1		1
Medium SS (117)	0.74 (0.25,2.17)		0.44 (0.13,1.51)
Low SS (176)	1.36 (0.57,3.22)		0.66 (0.20,2.20)
Total Social Support			
High SS (115)	1		1
Medium (119)	1.19 (0.38,3.71)		1.13 (0.35,3.70)
Low SS (184)	2.06 (0.78,5.45)		1.69 (0.60,4.76)
Ethnicity			
White UK (128)		1	1
Bangladeshi (190)		0.71 (0.33,1.51)	<u>0.31 (0.12,0.82)*</u>
Black (100)		<u>0.09 (0.01,0.67)*</u>	<u>0.08 (0.01,0.66)*</u>

* Adjusted models were adjusted for age, socio-economic status (eligibility for free school meals, parental employment status, parental ownership of vehicle) and country of birth, length of time in the UK.

Table 4.14 Odds Ratios and Confidence Intervals for SDQ Caseness at Phase II by Baseline Social Support Scores; Ethnicity; Adjusted Baseline Social Support Scores and Ethnicity.

FEMALE	SDQ caseness Phase II		
	Unadjusted Social Support Odds Ratio For SDQ Caseness	Unadjusted Ethnicity Odds Ratio For SDQ Caseness	Social Support and Ethnicity Odds Ratios For SDQ Caseness*
Friends			
High SS (189)	1		1
Medium SS (115)	1.33 (0.60,2.92)		0.82 (0.32,2.09)
Low SS (99)	0.88 (0.35,2.20)		0.48 (0.15,1.56)
Family			
High SS (144)	1		1
Medium SS (139)	0.76 (0.32,1.84)		1.15 (0.43,3.08)
Low SS (120)	1.27 (0.56,2.87)		1.89 (0.65,5.47)
Special Person			
High SS (175)	1		1
Medium SS (115)	1.26 (0.55,2.86)		1.60 (0.60,4.25)
Low SS (113)	1.09 (0.46,2.57)		1.16 (0.38,3.55)
Total Social Support			
High SS (168)	1		1
Medium (139)	0.87 (0.39,1.95)		0.93 (0.39,2.19)
Low SS (96)	0.96 (0.40,2.32)		0.84 (0.32,2.18)
Ethnicity			
White UK (120)		1	1
Bangladeshi (154)		0.66 (0.31,1.44)	1.13 (0.40,3.14)
Black (129)		0.36 (0.14,0.93)*	0.28 (0.10,0.84)*

* Adjusted models were adjusted for age, socio-economic status (eligibility for free school meals, parental employment status, parental ownership of vehicle) and country of birth, length of time in the UK.

Low family social support was associated with MFQ caseness in unadjusted analyses only. Interestingly, addition of the interaction term between social support and ethnicity did not affect the adjusted model. In fact, the association between low levels of family support and depressive symptoms for Male pupils remained non significant when the interaction term was omitted from the analyses (OR = 2.15 95% CI 0.87,5.34). Furthermore, the addition of the interaction term between social support and ethnicity did not affect the

association between ethnicity and MFQ caseness at follow-up. When a regression model was constructed without the inclusion of the interaction term between social support and ethnicity, the association between ethnicity and MFQ caseness remained as non significant for Bangladeshi pupils (OR = 1.00 95% CI 0.43,2.32).

The association between low levels of family social support and MFQ caseness became non-significant in adjusted analyses when friend support and special person support were entered into the regression model (see Table 4.15 Black male pupils reported significantly lower levels of MFQ caseness in unadjusted analyses, there were insufficient MFQ Cases in the adjusted model for analyses.

For female pupils, low family support and low overall support were significantly associated with an increased risk of MFQ caseness in unadjusted and adjusted analyses (see Table 4.16). Interestingly, addition of the interaction term between social support and ethnicity in the adjusted regression model made Bangladeshi pupils less likely to be defined as MFQ Cases at follow-up (OR = 0.29 (0.07,1.27) compared to when the interaction term between ethnicity and social support was not entered into the regression model (OR = 1.90 95% CI 0.92,3.91).

Table 4.15 Odds Ratios and Confidence Intervals for MFQ Caseness at Phase II by Unadjusted Baseline Social Support Scores; Unadjusted Ethnicity; Adjusted Baseline Social Support Scores and Ethnicity.

MALE	MFQ caseness Phase II		
	Unadjusted Social Support Odds Ratio For MFQ Caseness	Unadjusted Ethnicity Odds Ratio For MFQ Caseness	Social Support and Ethnicity Odds Ratios For MFQ Caseness*
Friends			
High SS (115)	1		1
Medium SS (101)	1.30 (0.54,3.11)		1.02 (0.38,2.78)
Low SS (202)	1.86 (0.88,3.90)		1.23 (0.45,3.36)
Family			
High SS (140)	1		1
Medium SS (136)	1.12 (0.50,2.48)		0.86 (0.34,2.14)
Low SS (142)	<u>2.23 (1.09,4.56)*</u>		1.63 (0.63,4.26)
Special Person			
High SS (125)	1		1
Medium SS (117)	1.74 (0.78,3.89)		0.86 (0.33,2.22)
Low SS (176)	1.70 (0.81,3.59)		0.34 (0.11,1.07)
Total Social Support			
High SS (115)	1		1
Medium (119)	0.89 (0.37,2.13)		0.32 (0.07,1.39)
Low SS (184)	1.80 (0.87,3.69)		0.46 (0.14,1.60)
Ethnicity			
White UK (128)		1	1
Bangladeshi (190)		1.57 (0.83,2.99)	0.29 (0.07,1.27)
Black (100)		<u>0.23 (0.06,0.83)</u>	Insufficient numbers for fully adjusted analyses

* Adjusted models were adjusted for age, socio-economic status (eligibility for free school meals, parental employment status, parental ownership of vehicle) and country of birth, length of time in the UK and an interaction between social support and ethnicity.

Table 4.16 Odds Ratios and Confidence Intervals for MFQ Caseness at Phase II by Unadjusted Baseline Social Support Scores; Unadjusted Ethnicity; Adjusted Baseline Social Support Scores and Ethnicity.

FEMALE	MFQ caseness Phase II		
	Unadjusted Social Support Odds Ratio For MFQ Caseness	Unadjusted Ethnicity Odds Ratio For MFQ Caseness	Social Support and Ethnicity Odds Ratios For MFQ Caseness*
Friends			
High SS (189)	1		1
Medium SS (115)	0.90 (0.51,1.60)		0.89 (0.46,1.72)
Low SS (99)	1.42 (0.81,2.49)		1.41 (0.67,2.99)
Family			
High SS (144)	1		1
Medium SS (139)	1.44(0.79,2.64)		1.32 (0.66,2.61)
Low SS (120)	<u>2.46 (1.36,4.45)</u>		<u>2.70 (1.20,6.08)</u>
Special Person			
High SS (175)	1		1
Medium SS (115)	1.40 (0.79,2.48)		1.09 (0.56,2.11)
Low SS (113)	1.45 (0.82,2.55)		0.94 (0.42,2.13)
Total Social Support			
High SS (168)	1		1
Medium (139)	1.31 (0.75,2.29)		0.66 (0.20,2.17)
Low SS (96)	<u>1.84 (1.02,3.32)</u>		<u>3.26 (1.06,9.99)*</u>
Ethnicity			
White UK (120)		1	1
Bangladeshi (154)		1.72 (0.97,3.05)	1.61 (0.57,4.60)
Black (129)		0.87 (0.46,1.65)	0.80 (0.27,2.40)

* Adjusted models were adjusted for age, socio-economic status (eligibility for free school meals, parental employment status, parental ownership of vehicle) and country of birth, length of time in the UK and an interaction between social support and ethnicity.

In order to minimise the possibility of reverse causality, these analyses excluded pupils who were defined as either an SDQ or MFQ case at baseline. It is also worth adjusting for baseline continuous scores of the SDQ and MFQ as this further reduces the possibility of reverse causality. Tables 4.17 and 4.18 display whether adjusting for baseline sub syndrome SDQ and MFQ alter the association between baseline social support and mental health outcomes illustrated in the previous section of this chapter. Table 4.16 displays odds ratios and 95% confidence intervals for two sets of analyses for male pupils. The first column of odds ratios and 95% confidence intervals displays the adjusted

association as displayed in tables 4.13 – 4.16 of this chapter. The second column of odds ratios and 95% confidence intervals include an adjustment for baseline sub syndrome SDQ and MFQ scores. It can be seen that adding baseline sub syndrome SDQ and MFQ scores makes a minor difference to the association between the subscales of the MSPSS and mental health outcomes at follow-up, but the addition of these scores do not alter the lack of significance between exposure and outcome.

Similarly, adjusting for baseline sub syndrome SDQ and MFQ does not alter the significance of the association between the baseline subscales of social support and mental health outcomes for female pupils in these analyses (see Table 4.18)

Table 4.17 Further Adjustment for Baseline Sub Syndrome SDQ and MFQ Scores for Male Pupils in the Association between Baseline Social Support and Mental Health Outcomes at Follow-up.

		Odds Ratios and 95% Confidence Intervals for SDQ Caseness at Follow-up		Odds Ratios and 95% Confidence Intervals for MFQ Caseness at Follow-up	
Social Support for Male Pupils					
Family					
	High	1	1	1	1
	Medium	1.64 (0.55,4.46)	1.43 (0.47,4.36)	0.86 (0.34,2.14)	0.82 (0.33,2.07)
	Low	1.31 (0.39,4.38)	1.10 (0.32,3.71)	1.63 (0.63,4.26)	1.83 (0.71,4.70)
Friend					
	High	1	1	1	1
	Medium	0.58 (0.15,2.17)	0.58 (0.15,2.26)	1.02 (0.38,2.78)	1.03 (0.38,2.78)
	Low	1.43 (0.46,4.46)	1.33 (0.41,4.30)	1.23 (0.45,3.36)	1.49 (0.56,3.94)
Special Person					
	High	1	1	1	1
	Medium	0.44 (0.13,1.51)	0.53 (0.15,1.74)	0.86 (0.33,2.22)	0.98 (0.39,2.48)
	Low	0.66 (0.20,2.20)	0.77 (0.23,2.66)	0.34 (0.11,1.07)	1.87 (0.61,5.75)

Table 4.18 Further Adjustment for Baseline Sub Syndrome SDQ and MFQ Scores for Female Pupils in the Association between Baseline Social Support and Mental Health Outcomes at Follow-up.

		Odds Ratios and 95% Confidence Intervals for SDQ Caseness at Follow-up		Odds Ratios and 95% Confidence Intervals for MFQ Caseness at Follow-up	
Social Support for Female Pupils					
Family					
	High	1	1	1	1
	Medium	1.15 (0.43,3.08)	0.89 (0.31,2.51)	1.32 (0.66,2.61)	1.18 (0.58,2.37)
	Low	1.89 (0.65,5.47)	1.63 (0.54,4.94)	<u>2.70 (1.20,6.08)</u>	<u>2.16 (1.01,4.62)</u>
Friend					
	High	1	1	1	1
	Medium	0.82 (0.32,2.09)	0.86 (0.32,2.34)	0.89 (0.46,1.72)	0.75 (0.39,1.46)
	Low	0.48 (0.15,1.56)	0.44 (0.13,1.58)	1.41 (0.67,2.99)	1.04 (0.50,2.16)
Special Person					
	High	1	1	1	1
	Medium	1.60 (0.60,4.25)	1.37 (0.50,3.82)	1.09 (0.56,2.11)	1.02 (0.52,1.98)
	Low	1.16 (0.38,3.55)	1.01 (0.31,3.29)	0.94 (0.42,2.13)	0.85 (0.40,1.82)

4.10.1 Section Summary

This chapter highlighted some interesting findings. Significant associations between low levels of total support, specifically family support, and depressive symptoms were apparent for female pupils only. Female pupils were also more likely to be defined as an MFQ Case at follow-up compared with male pupils, though there was no evidence for an interaction between social support and gender predicting depressive symptoms. Family members may provide a stable source of support and reports of low family support have an adverse effect on depressive symptoms for female pupils. The association between low levels of family support and depressive symptoms did not alter when ethnicity or additional covariate variables were entered into adjusted regression models.

The analyses in this chapter were not stratified by ethnicity. Appendix 8 displays unadjusted analyses for the association between social support (subscales and total MSPSS) stratified by three main ethnic groups. It can be seen from Appendix 8 that there were no significant associations between baseline social support (subscales and total MSPSS) and mental health outcomes at follow-up. However, it should be noted that Bangladeshi pupils with

low levels of social support (subscales and total MSPSS) generally displayed greater levels of psychological distress and SDQ caseness compared with White UK and Black pupils.

Ethnic variations in mental health outcomes were evident, though differences in baseline social support could not account for these findings. Male and Female Black pupils displayed particularly lower levels of SDQ Caseness compared with White UK pupils, and there were too few Black Male pupils defined as an MFQ Case to include Black pupils in the adjusted regression analyses. It may be a possibility that Black pupils, particularly males, are less willing to report symptoms of psychological distress and depressive symptoms. However, subsequent analyses in the following Chapter investigate whether pupils with peers from a similar cultural background (i.e. friendship choices) can account for ethnic variations in mental health outcomes.

Investigating Ethnic Variations in Mental Health Outcomes: Exploration of Friendship Choices Reported by White UK, Bangladeshi and Black Pupils

Chapter 5

5.1 Chapter Overview

Adjusted regression models presented in the previous chapter revealed that Black pupils reported a significantly reduced risk of psychological distress at follow-up compared with White UK pupils. Bangladeshi male pupils also reported a significantly reduced risk of symptoms of psychological distress at follow-up compared with White UK male pupils. Adjusting for covariate variables, including social support and socio-economic indicators, did not explain lower levels of SDQ Caseness in these groups. The main aim of this chapter is to uncover whether friendship choices can explain lower levels of psychological distress amongst Black pupils and male Bangladeshi pupils. Furthermore, potential interaction effects between friendship choices and sources of social support are explored.

5.1.1 Introduction

Social support, measured by the MSPSS, could not account for ethnic variations in mental health outcomes at follow-up amongst pupils in this study. One possible explanation for this finding is that the ethnic disparities in mental health cannot be explained by social support. However, limitations of the measures used can have an impact on the study findings. For example, the use of ethnicity as a variable to categorise participants may lead to pitfalls and generalisations if one fails to consider the context and meaning behind ethnicity. A group of individuals defined within one ethnic group may consider their assignment to a particular ethnic group as merely a broad spectrum marker for numerous features. On the other hand, some individuals will

interpret their ethnicity as a core component of their identity through the clothes they wear, social activities they engage in, preference in music and many other activities in which they engage in. In other words, the use of ethnicity as a variable to measure disparities in psychological distress is more informative when used in conjunction with further information regarding an individual's cultural preferences. The MSPSS does not measure whether the provider of support is from a culturally similar background to the individual. Bhui *et al.*, 2005 found that assimilated Black Caribbean pupils reported a higher risk of depressive symptoms, whereas integrated and traditional friendship choices were associated with a lower risk of depressive symptoms for Bangladeshi pupils at baseline of the RELACHS study. These authors suggest that lower levels of depressive symptoms amongst Bangladeshi pupils may be explained by protective effects of having culturally similar friendship choices.

Measuring a domain of acculturative style such as friendship choices can investigate the impact of friendship choices with culturally similar or dissimilar peers upon psychological distress. Although the Native Hawaiian Mental Health Research Development Program found that adolescents defined as adopting a traditional acculturative style were more likely to report attempted suicide than those pupils who reported other types of acculturative style, Bhui *et al.*, 2005 suggest that integrated and traditional acculturative styles are associated with protective effects for psychological well being.

Regression models presented in Chapter 4 adjusted for proxy indicators of acculturative style (country of birth and length of time in the UK). However, the main aim of this chapter is to focus on one specific domain of cultural identity, friendship choices and to explore whether friendship choices, choice of culturally similar or dissimilar peers, can account for ethnic variations in psychological distress. Interestingly, Chapter 4 of the thesis highlighted that there were insufficient numbers of male MFQ Cases for Black pupils, and it therefore may be the case that Black male pupils in the sample experienced protective effects of culturally similar friendship choices.

This chapter builds on the notion that Black pupils and Bangladeshi male pupils experience protective effects of culturally similar friendship choices. It is, however, beyond the scope of analyses in this chapter to investigate the impact of ethnic density upon psychological distress.

5.1.2 Chapter Hypothesis

Analyses in this chapter initially present descriptive statistics of friendship choices split by 3 main ethnic groups and gender. Descriptive analyses seek to explore whether there are significant differences in the distribution of friendship choices between ethnic groups and gender. Once these analyses have been presented, the hypothesis of the chapter proposes that:

Hypothesis 5) Traditional or Integrated friendship choices account for lower rates of psychological distress in those ethnic groups reporting lower levels of psychological distress.

5.2. Missing Data of Friendship Choices Questions at Baseline and Follow-up

Acculturative style variables such as friendship choices had not been entered into the adjusted models in Chapter 4 due to a large number of missing values on the acculturative style variables. 58 pupils had missing data for acculturative style variables at baseline and the remaining 763 pupils were grouped as follows: White UK (N=235), Asian Bangladeshi (N=316) and Black (N=212). Selected analyses in this chapter investigate whether traditional friendship choices at baseline and follow-up are associated with a lower risk of SDQ caseness at follow-up. Four pupils did not have full data for friendship choices at follow-up and therefore 759 pupils were available for analyses using friendship choices at baseline and follow-up. 761 pupils were analysed using friendship choices at baseline only.

5.3 Descriptive Statistics Exploring Friendship Choices Across Three Main Ethnic Groups

The initial aim of this chapter is to report the distribution of friendship choices split by 3 main ethnic groups and gender. Section 5.5 of this Chapter will investigate whether friendship choices can account for ethnic variations in psychological distress established in Chapter 4. Splitting the frequency of friendship choices by ethnicity, revealed statistically significant ethnic differences amongst groups for friendship choices $\chi^2(1, N = 763) = 0.20, p < .001$, where Bangladeshi pupils reported a greater proportion of traditional friendship choices (see Figure 5.1). There were no statistically significant differences for friendship choices between genders within each ethnic group (see Figure 5.2a and Figure 5.2b).

Figure 5.1 Distribution of Friendship Choices at Baseline Split by 3 Main Ethnic Groups.

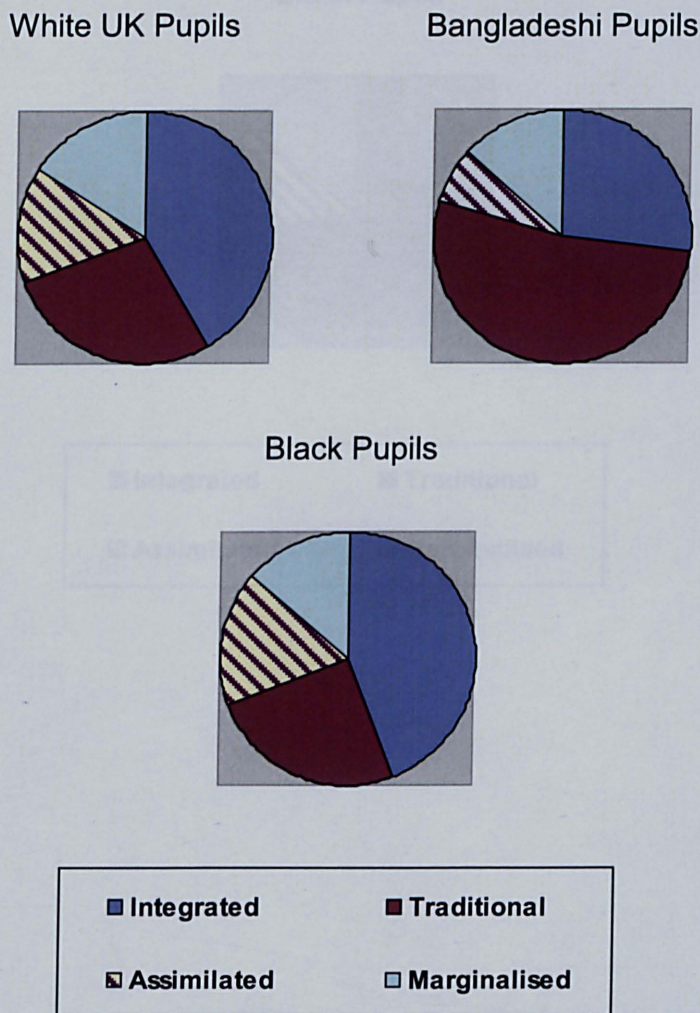


Figure 5.2a Distribution of Friendship Choices at Baseline Split by 3 Main Ethnic Groups for Male Pupils.

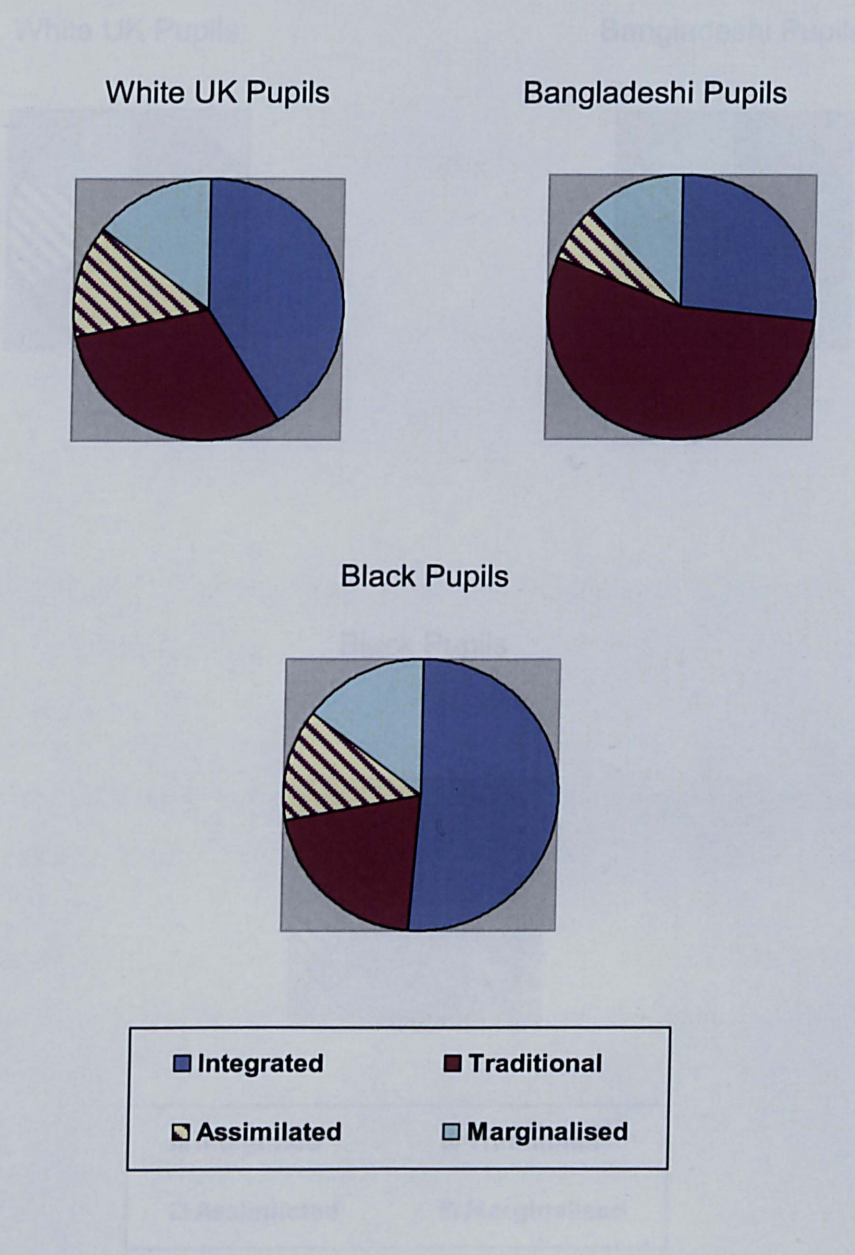
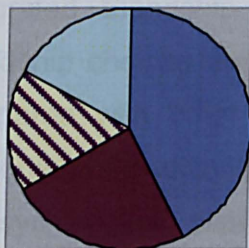


Figure 5.2b Distribution of Friendship Choices at Baseline Split by 3 Main Ethnic Groups for Female Pupils.

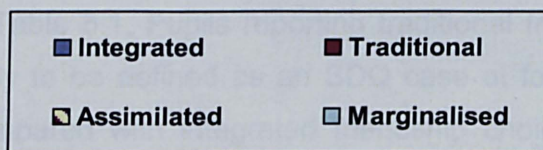
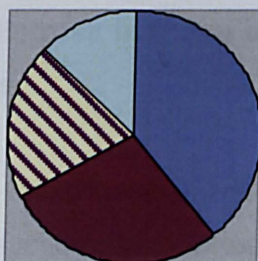
White UK Pupils



Bangladeshi Pupils



Black Pupils



5.3.1 Section Summary

In these analyses, the distribution of friendship choices significantly differed across ethnic groups. Whilst Bangladeshi pupils reported a relatively high level of traditional friendship choices, Black pupils reported a relatively high level of integrated friendship choices. It is proposed that traditional and integrated friendship choices are associated with fewer symptoms of psychological distress compared with other styles of acculturation. It may be the case that a high proportion of traditional and integrated friendship choices account for lower levels of psychological distress amongst Black pupils and Bangladeshi male pupils reported in Chapter 4.

5.4 Unadjusted Associations between Friendship Choices at Baseline and Psychological Distress at Follow-up

Hypothesis 5) Traditional or Integrated friendship choices account for lower rates of psychological distress in those ethnic groups reporting lower levels of psychological distress.

Analyses in this section investigate univariate associations between friendship choices at baseline and psychological distress at follow-up. Unadjusted odds ratios and 95% confidence intervals for SDQ predicted by friendship choices are presented in Table 5.1. Pupils reporting traditional friendship choices at baseline were less likely to be defined as an SDQ case at follow-up (OR = 0.38, 95% CI 0.19,0.78) compared with integrated friendship choices. When unadjusted odds ratios and 95% confidence intervals for Follow-up SDQ caseness were split by 3 main ethnic groups (see Table 5.2), traditional friendship choices were significantly associated with a lower risk of SDQ caseness at follow-up for Bangladeshi pupils only (OR = 0.23, 95% CI 0.08,0.70). Although traditional friendship choices were not significantly associated with a lower risk of SDQ caseness for White UK or

Black pupils, traditional friendship choices generally showed less risk for follow-up SDQ caseness compared with other friendship choices for White UK and Black pupils. Although the majority of Black pupils reported integrated friendship choices, integrated friendship choices were not associated with a lower risk of SDQ caseness at follow-up compared with other friendship choices.

Table 5.1 Unadjusted Odds Ratios and 95% Confidence Intervals for SDQ Caseness predicted by Friendship Choices at Baseline

Acculturative Style	OR (95% CI) Unadjusted
Friendship Choices	
Integrated (277)	1
Traditional (284)	<u>0.38 (0.19,0.78)**</u>
Assimilated (94)	1.19 (0.56,2.51)
Marginalised (108)	1.04 (0.50,2.19)

**p<0.01

Table 5.2 Unadjusted Odds Ratios and 95% Confidence Intervals for SDQ Caseness predicted by Friendship Choices at Baseline Split by 3 Main Ethnic Groups

Acculturative Style	OR (95% CI) Unadjusted for SDQ Caseness
Friendship Choices for White UK Pupils	
Integrated (98)	1
Traditional (65)	0.48 (0.16,1.45)
Assimilated (35)	1.10 (0.37,3.30)
Marginalised (37)	0.81 (0.26,2.54)
Friendship Choices for Bangladeshi Pupils	
Integrated (85)	1
Traditional (166)	<u>0.23 (0.08,0.70)**</u>
Assimilated (23)	1.85 (0.55,6.24)
Marginalised (42)	1.15 (0.38,3.52)
Friendship Choices for Black Pupils	
Integrated (94)	1
Traditional (53)	0.85 (0.14,5.34)
Assimilated (36)	0.71 (0.08,6.57)
Marginalised (29)	0.96 (0.10,8.8)

**p<0.01

There were too few numbers in these analyses to split regression models by gender as well as ethnicity. Tables 5.3 and 5.4 below display associations between friendship choices and psychological distress split by gender and adjusted for ethnicity. For male pupils, integrated and traditional friendship choices are generally associated with fewer symptoms of psychological distress. Assimilated friendship choices were significantly more likely to be associated with SDQ caseness at follow-up compared with integrated friendship choices (OR = 3.50, 95% CI 1.23,9.94) and this association was still apparent when ethnicity was entered into the regression model (OR = 3.59, 95% CI 1.23,10.53). On the other hand, culturally dissimilar friendship choices were not associated with a greater risk of SDQ caseness for female pupils (see Table 5.4). In fact, traditional, assimilated or marginalised friendship choices were generally associated with decreased odds of psychological distress at follow-up compared with integrated friendship choices for female pupils. Traditional friendship choices were protective for all female pupils in unadjusted (OR = 0.26, 95% CI 0.10,0.70) and adjusted analyses (OR = 0.26, 95% CI 0.09,0.71).

Table 5.3 Odds Ratios and 95% Confidence Intervals for SDQ Caseness predicted by Friendship Choices at Baseline for Male Pupils

MALE	Unadjusted Odds Ratios and 95% Confidence Intervals For SDQ Caseness	Odds Ratios and 95% Confidence Intervals For SDQ Caseness (Adjusted for Ethnicity)
Friendship Choices		
Integrated (142)	1	1
Traditional (148)	0.64 (0.22,1.86)	0.51 (0.17,1.52)
Assimilated (41)	<u>3.50 (1.23,9.94)*</u>	<u>3.59 (1.23,10.53)*</u>
Marginalised (51)	1.13 (0.32,4.04)	1.01 (0.28,3.67)

p<0.05, **p<0.01

Table 5.4 Odds Ratios and 95% Confidence Intervals for SDQ Caseness predicted by Friendship Choices at Baseline for Female pupils

FEMALE	Unadjusted Odds Ratios and 95% Confidence Intervals For SDQ Caseness	Odds Ratios and 95% Confidence Intervals For SDQ Caseness (Adjusted for Ethnicity)
Friendship Choices		
Integrated (135)	1	1
Traditional (136)	<u>0.26 (0.10,0.70)**</u>	<u>0.26 (0.09,0.71)*</u>
Assimilated (53)	0.39 (0.11,1.37)	0.40 (0.11,1.44)
Marginalised (57)	0.98 (0.39,2.46)	0.94 (0.37,2.37)

* p<0.05, **p<0.01

5.4.1 Section Summary

In summary, traditional friendship choices were associated with lower levels of psychological distress at follow-up. Integrated friendship choices were the reference friendship choices group in these analyses and it is worth noting that pupils defined as having marginalised friendship choices displayed similar levels of psychological distress to pupils defined as having integrated friendship choices. Hypothesis 5 predicted that traditional or integrated friendship choices account for lower rates of psychological distress in those ethnic groups reporting lower levels of psychological distress. This hypothesis was partly supported. Traditional friendship choices, but not integrated friendship choices, were associated with a protective effect for follow-up psychological distress. The association between friendship choices at baseline and psychological distress at follow-up also differed according to ethnicity and gender. Traditional friendship choices proved to be most beneficial for Bangladeshi pupils in this sample. Assimilated friendship choices were significantly associated with greater levels of psychological distress at follow-up for male, but not female, pupils.

5.5 Investigating Whether Friendship Choices Account for the Association between Ethnicity and Psychological Distress

These analyses investigate whether friendship choices can account for ethnic variations in psychological distress illustrated in Chapter 4 of the thesis.

Regression analyses were conducted, where odds ratios and 95% confidence intervals for SDQ caseness were predicted by ethnicity, friendship acculturative style and mutually adjusted ethnicity and friendship acculturative style. Table 5.5 displays odds ratios and confidence intervals for SDQ caseness for male pupils. As reported in the previous section, assimilated friendship choices were significantly associated with SDQ caseness at follow-up in the unadjusted model (OR = 3.50; 95% CI 1.23, 9.94). The association between assimilated friendship choices and SDQ caseness remained significant in the adjusted model but friendship choices do not account for lower levels of SDQ caseness in Black Male pupils.

Adjusted analyses presented in Chapter 4 revealed that a lower risk of SDQ caseness was apparent for Bangladeshi pupils once indicators of socioeconomic status were entered in the regression model (see Table 4.14 in Chapter 4). However, Table 5.5 below illustrates that Bangladeshi pupils did not report a lower level of psychological distress once friendship choices were entered into the regression model. To eliminate the possibility that a lower risk of SDQ caseness for Bangladeshi pupils could be explained by socioeconomic indicators, a regression model adjusting for ethnicity, friendship choices and socioeconomic indicators was built (see Table 5.6, column 3). Adjusting for socioeconomic indicators did not significantly alter the association between ethnicity and SDQ caseness.

Further analyses investigated whether Friendship choices at baseline could account for lower levels of SDQ caseness in Bangladeshi male pupils, or the possibility that pupils excluded from these analyses due to missing data for friendship identity choices at baseline (N = 58) were more likely to be defined as SDQ cases compared with pupils included in the analyses (N = 763). Table 5.7

displays the frequency of pupils defined as SDQ Cases for the pupils included in the analyses and those pupils with data missing for Friendship choices at baseline. At baseline, a greater proportion of pupils with missing data for friendship choices at baseline were defined as an SDQ Case at follow-up. 14.3% of Bangladeshi pupils with missing data for Friendship Choices at baseline were defined as SDQ Cases at follow-up, compared with 7.1% of male Bangladeshi pupils with data available for Friendship Choices at baseline. However, further regression analyses revealed that pupils with missing data for friendship choices at baseline were not significantly more likely to be defined as an SDQ Case at follow-up. It may be the case that some pupils with missing data for friendship choices at baseline were slower to complete the questionnaire as friendship choices questions were placed at the end of the questionnaire.

Table 5.5 Odds Ratios and 95% Confidence Intervals for SDQ Caseness at Follow-up Predicted by Friendship Choices, Ethnicity and Adjusted Models for Ethnicity and Friendship Choices for Male pupils.

<u>MALE</u>	SDQ caseness Phase II		
	Unadjusted Odds Ratios and 95% Confidence Intervals For SDQ Caseness	Unadjusted Odds Ratios and 95% Confidence Intervals For SDQ Caseness	Adjusted Odds Ratios and 95% Confidence Intervals For SDQ Caseness●
Friendship Choices			
Integrated (142)	1		1
Traditional (148)	0.64 (0.22,1.86)		0.51 (0.17,1.52)
Assimilated (41)	<u>3.50 (1.23,9.94)*</u>		<u>3.59 (1.23,10.53)*</u>
Marginalised (51)	1.13 (0.32,4.04)		1.01 (0.28,3.67)
Ethnicity			
White UK (117)		1	1
Bangladeshi (169)		0.67 (0.29,1.52)	0.87 (0.37,2.06)
Black (96)		<u>0.10 (0.01,0.75)*</u>	<u>0.09 (0.01,0.67)*</u>

● Adjusted for Friendship Choices at Baseline and Ethnicity

* p<0.05

Table 5.6 Odds Ratios and 95% Confidence Intervals For SDQ Caseness Predicted by Ethnicity

	Unadjusted Odds Ratios and 95% Confidence Intervals For SDQ Caseness	Odds Ratios and 95% Confidence Intervals for SDQ Caseness – Adjusted for Friendship Choices	Odds Ratios and 95% Confidence Intervals for SDQ Caseness – Adjusted for Friendship Choices and Socioeconomic Indicators
Ethnicity			
White UK (117)	1	1	1
Bangladeshi (169)	0.67 (0.29,1.52)	0.87 (0.37,2.06)	0.47 (0.17,1.28)
Black (96)	<u>0.10 (0.01,0.75)*</u>	<u>0.09 (0.01,0.67)*</u>	<u>0.07 (0.01,0.55)*</u>

* p<0.05

Table 5.7 Frequency of SDQ Cases for Pupils with Available Data for Friendship Choices at Baseline and Pupils with Missing Data for Friendship Choices at Baseline

	Pupils with Available Data For Friendship Choices at Baseline (N = 763)	Pupils with Missing Data For Friendship Choices at Baseline (N = 58)
% (N) SDQ Cases	7.7 (59)	10.3 (6)
	Bangladeshi Male Pupils with Available Data For Friendship Choices at Baseline (N = 169)	Bangladeshi Male Pupils with Missing Data For Friendship Choices at Baseline (N = 21)
% (N) SDQ Cases	7.1 (12)	14.3 (3)

5.5.1 Section Summary

These analyses revealed several important issues. Firstly, baseline measures of Friendship choices cannot account for lower levels of SDQ caseness at follow-up for male pupils defined as Black. Lower levels of psychological distress could not be explained by friendship choices for Black pupils. Friendship identity was not associated with SDQ caseness at follow-up for Black pupils and it may worthwhile to explore additional culturally associated variables such as attendance at religious

places of worship. Alternatively, Black pupils may have been less willing to report symptoms of psychological distress at follow-up.

An additional issue emerging from these analyses is the gender difference emerging in the association between friendship choices and SDQ caseness at follow-up. Assimilated friendship choices were significantly associated with SDQ caseness at follow-up for male pupils, yet traditional friendship choices were significantly protective for SDQ caseness at follow-up for female pupils. Traditional friendship choices were associated with a lesser risk of SDQ caseness for male pupils, though this association was not significant.

Significantly lower levels of SDQ caseness for Bangladeshi male pupils reported in Chapter 4 were not apparent once friendship choices were entered into the regression model. Although Bangladeshi male pupils reported slightly lower levels of SDQ caseness than White UK males, this association was not significant once baseline friendship choices were entered into the regression model. This evidence suggests that friendship choices can account for lower levels of psychological distress amongst Bangladeshi male pupils.

Although there is evidence to suggest that baseline friendship choices can explain lower levels of psychological distress amongst Bangladeshi male pupils, friendship choices may fluctuate overtime. It is worth investigating whether pupils reporting traditional friendship choices at both baseline *and* follow-up display lower levels of psychological distress at follow-up.

5.6 Traditional Friendship Choices at Baseline and Follow-up as a Protective Factor for Lower Levels of Psychological Distress in Bangladeshi Male Pupils

This section provides supplementary analyses for the Chapter. This section investigates whether pupils reporting traditional friendship choices at baseline and follow-up report fewer symptoms of psychological distress at follow-up. The specific aim of this section is to report whether pupils reporting traditional friendship choices at both baseline and follow-up display lower levels of psychological distress at follow-up compared with other pupils.

Table 5.8 displays a frequency count of the distribution of 3 mutually exclusive categories of friendship choices split by ethnicity and gender. These categories are: traditional friendship choices at baseline only, traditional friendship choices at baseline and follow-up and other friendship choices. A significant difference in the distribution of friendship choices (as shown in Table 5.8) and ethnicity was apparent (Cramer's $V = 0.20$, $p < 0.01$). 36.5% of male Bangladeshi pupils reported traditional friendship choices at baseline and follow-up. However, there was no significant difference within each ethnic group between male and female pupils.

Table 5.8 Distribution of Friendship Choices Split by Ethnicity and Gender.

	% Traditional Friendship Choices at Baseline Only (N)	% Traditional Friendship Choices at Baseline and Follow-up (N)	% Other Friendship Choices at Baseline and Follow-up (N)	Total (N)
White UK				
Male	16.4 (19)	14.7 (17)	69.0 (80)	116
Female	15.3 (18)	9.3 (11)	75.4 (89)	118
Bangladeshi				
Male	18.0 (30)	36.5 (61)	45.5 (76)	167
Female	23.8 (35)	26.5 (39)	49.7 (73)	147
Black				
Male	11.6 (11)	9.5 (9)	78.9 (75)	95
Female	13.8 (16)	14.7 (17)	71.6 (83)	116
Mean % and Total (N)	16.5 (129)	18.5 (154)	65.0 (476)	759

The next analyses then examined univariate associations between the three friendship choices categories (displayed in Table 5.8) and SDQ caseness at follow-up. Logistic regression models were built based on male and female pupils and subsequently split by gender. Odds ratios and 95% confidence intervals for SDQ caseness are shown by friendship choices (Table 5.9). Both traditional friendship at baseline only and traditional baseline choices at baseline and follow-up were associated with a lower risk of SDQ caseness (OR = 0.33; 95% CI 0.12, 0.89 and OR = 0.40; 95% CI 0.18,0.90 respectively). However, when regression models were split by gender (see Tables 5.10 and 5.11), neither traditional choices at baseline or traditional choices at baseline and follow-up were significantly associated with SDQ caseness at follow-up. The loss of a significant association between traditional friendship choices and SDQ caseness for male or female pupils may be explained by a smaller sample size in these analyses because the magnitude of the odds ratio remained similar. Similarly, due to few numbers, separate analyses for each ethnic group and gender could not be conducted (See Appendix 9).

Table 5.9 Unadjusted Odds Ratios and 95% Confidence Intervals for SDQ Caseness at Follow-up Predicted by Friendship Choices

Acculturative Style	Unadjusted Odds Ratios and 95% Confidence Intervals For SDQ Caseness
Friendship Choices Integrated/Assimilated or Marginalised Friendship Choices at Baseline or Follow-up (476)	1
Traditional Friendship Choices at Baseline Only (129)	<u>0.33 (0.12,0.89)*</u>
Traditional Friendship Choices at Baseline and Follow-up (154)	<u>0.40 (0.18,0.90)*</u>

Table 5.10 Odds Ratios and 95% Confidence Intervals for SDQ Caseness at Follow-up Predicted by Friendship Choices, Ethnicity and Ethnicity and Friendship choices for Male pupils.

Acculturative Style for MALE Pupils	Unadjusted Odds Ratios and 95% Confidence Intervals Predicting SDQ Caseness at Follow-up	Unadjusted Odds Ratios and 95% Confidence Intervals Predicting SDQ Caseness at Follow-up	Unadjusted Odds Ratios and 95% Confidence Intervals Predicting SDQ Caseness at Follow-up•
Friendship Choices Integrated/Assimilated or Marginalised Friendship Choices at Baseline or Follow-up (231)	1		1
Traditional Friendship Choices at Baseline Only (60)	0.34 (0.07,1.62)		0.29 (0.06,1.41)
Traditional Friendship Choices at Baseline and Follow-up (87)	0.55 (0.20,1.59)		0.46 (0.15,1.37)
Ethnicity White UK (116) Bangladeshi (167) Black (95)		1 0.63 (0.27,1.45) 0.10 (0.01,0.75)*	1 0.76 (0.32,1.80) 0.09 (0.01,0.68)*

• Adjusted for Friendship Choices at Baseline and Ethnicity * p<0.05

Table 5.11 Odds Ratios and 95% Confidence Intervals for SDQ Caseness at Follow-up Predicted by Friendship Choices, Ethnicity and Adjusted Models for Ethnicity and Friendship Choices for Female Pupils.

Acculturative Style for FEMALE Pupils	Unadjusted Odds Ratios and 95% Confidence Intervals Predicting SDQ Caseness at Follow-up	Unadjusted Odds Ratios and 95% Confidence Intervals Predicting SDQ Caseness at Follow-up	Unadjusted Odds Ratios and 95% Confidence Intervals Predicting SDQ Caseness at Follow-up•
Friendship Choices Integrated/Assimilated or Marginalised Friendship Choices at Baseline or Follow-up (245)	1		1
Traditional Friendship Choices at Baseline Only (69)	0.32 (0.09,1.15)		0.31 (0.09,1.12)
Traditional Friendship Choices at Baseline and Follow-up (67)	0.29 (0.08,1.06)		0.28 (0.08,1.08)
Ethnicity White UK (118) Bangladeshi (147) Black (116)		1 0.62 (0.28,1.37) 0.39 (0.15,1.02)	1 0.80 (0.35,1.81) 0.40 (0.15,1.06)

• Adjusted for Friendship Choices at Baseline and Ethnicity

5.6.1 Section Summary

Once again, a trend demonstrating protective effects of traditional friendship choices was apparent. Both traditional friendship choices at baseline only and traditional friendship choices at baseline and follow-up were associated with lower levels of psychological distress at follow-up compared with other types of friendship choices. However, pupils with traditional friendship choices at baseline and traditional friendship choices at follow-up were not more likely to illustrate lower risk of symptoms of psychological distress at follow-up than pupils reporting traditional friendship choices at baseline only.

5.7 Investigating the Interaction between Friend Social Support and Ethnicity: Accounting for Friendship Choices at Baseline

One of the interesting findings emerging from Chapter 4 is the evidence for an interaction between friend social support and ethnicity. Bangladeshi pupils reporting medium levels of friend social support were more likely to report MFQ caseness at follow-up, but this association was not apparent for White UK or Black pupils. One explanation for this finding is that Bangladeshi pupils reporting medium levels of friend social support are less likely to benefit from the protective effects of traditional friendship choices.

The distribution of friendship choices by tertiles of friend support did not significantly differ for Bangladeshi pupils. There was no significant difference between tertiles of friend social support at baseline and friendship choices at baseline for Bangladeshi pupils.

Entering friendship choices in a regression model made the interaction between ethnicity and friend social support non-significant. As there was not a change in odds ratios, however, this effect may be explained by few numbers or the fact that

pupils with missing data on friend choices at baseline were more likely to be defined as an MFQ Case compared with those pupils with data available on friendship choices.

Sensitivity analyses revealed that pupils with missing data on friendship choices at baseline were statistically more likely to be defined as an MFQ case. Friendship choices at baseline can not account for the interaction between friend social support and ethnicity predicting depressive symptoms amongst Bangladeshi pupils.

Chapter 6

The Association between Change in Social Support Overtime and Psychological Distress and Depressive Symptoms at Follow-up

6.1 Introduction

Findings from Chapter 4 revealed an association between low levels of family support at baseline and depressive symptoms at follow-up for female pupils. As previously discussed in the thesis, a negative association between family support and depressive symptoms corroborate existing research findings. Low levels of family support were associated with higher levels of depressive symptoms for all three main ethnic groups, but there was no evidence to suggest that lower levels of family support were more detrimental for Bangladeshi adolescents compared with White UK adolescents' i.e. an interaction between family social support and ethnicity predicting depressive symptoms was not apparent.

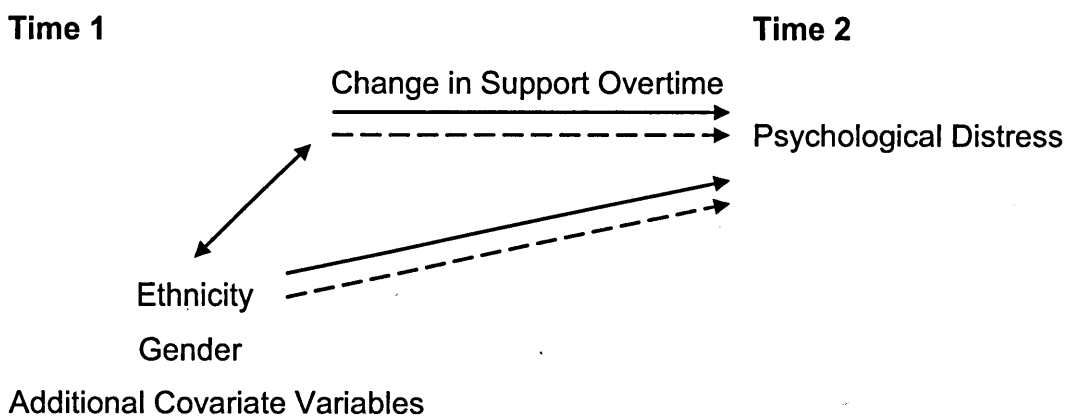
It should be taken into consideration however, that social support is not a fixed construct and fluctuates throughout the life-course. Adolescence has traditionally been characterised as a period of 'storm and stress' (Hall, 1916) and is accompanied by biological, psychological and social changes. Changes in social circumstances, such as entering a new school, may involve formation of new relationships.

Many authors have suggested that support sources shift during adolescence from family support to an increased reliance on friends (e.g. Levitt *et al.*, 1993). Some researchers have debated the impact of fluctuations in social support on psychological distress during adolescence and it may be the case that a decrease in some sources of social support is more detrimental to some pupils than others. Results from Chapter 4 revealed that low levels of family social support at baseline

were associated with a high level of depressive symptoms at follow-up for female pupils, but not for male pupils at follow-up. It may therefore be the case that a decrease in family support overtime is more unfavourable to female pupils than male pupils. To my knowledge, an interaction between family social support and gender predicting depressive symptoms in a prospective adolescent sample has not been investigated.

Few studies have investigated the impact of changes in support overtime on mental health outcomes in an ethnically diverse population. This chapter investigates changes in support overtime and the association between changes in support overtime with mental health outcomes. Figure 6.1 presents a path diagram of social support overtime and psychological distress. An independent association with psychological distress is indicated by a solid arrow in figure 6.1 where a significant association between risk factor and psychological distress will remain once covariates, such as ethnicity and gender, are adjusted for. A dotted arrow in figure 6.1 indicates an association that weakens when other risk factors or covariate variables are considered.

Figure 6.1 Path Diagram of Changes in Social Support Overtime, Covariate Variables and Psychological Distress.



6.1.1 Chapter Hypothesis

The hypothesis of this chapter is:

Hypothesis 6) A relative decrease in family social support overtime is associated with depressive symptoms measured as MFQ Caseness and psychological distress measured by the SDQ at 2-year follow-up.

The hypothesis above shall be unpacked by describing changes in social support (subscales and total scale of the MSPSS) over time. Exploration of the role of covariate variables on the pathway displayed in Figure 6.1 will also be presented.

6.2 Sample and Missing Values

6.2.1 Missing on Unobserved Data

1503 pupils participated in Wave I and Wave II of the study and were defined as non-cases on baseline measures of the SDQ and the MFQ. However, 378 pupils had data missing for baseline and follow-up social support, follow-up mental health, ethnicity or baseline covariate variables. Therefore, it is necessary to establish whether pupils with data missing on social support and covariate variables are more likely to have data missing on mental health outcomes at follow-up. Table 6.1 displays odds ratios and 95% confidence intervals for SDQ caseness and MFQ caseness for all pupils (N=1503) including pupils with data missing at baseline, where missing items at baseline were coded as a 'missing' variable. Only 3 pupils had missing data for ownership of family vehicle and therefore this variable was not included in Table 6.1 The majority of pupils with data missing on social support or covariate variables at baseline were statistically more likely to have data missing on SDQ or MFQ status at follow-up. It is not therefore possible to infer whether pupils with data missing are more likely to be defined as an SDQ or MFQ case as

there is a strong association between missing data for social support and covariate variables and missing data for mental health outcomes.

Table 6.1 Odds Ratios and 95% Confidence Intervals for SDQ or MFQ Caseness for Covariates Including Unobserved Data

	Odds Ratios and 95% Confidence Intervals to Predict Complete Data on Wave II SDQ Status	Odds Ratios and 95% Confidence Intervals to Predict Complete Data on Wave II MFQ Status
Year Group		
Year 7 (775)	1	1
Year 9 (728)	0.90 (0.51, 1.58)	1.79 (1.26, 2.52)**
Country of Birth		
UK (1202)	1	1
Non-UK (289)	0.40 (0.22, 0.72)*	0.48 (0.33, 0.70)**
Missing (8)	0.08 (0.01, 0.45)*	0.27 (0.05, 1.49)
Length of Time in the UK		
All of Pupil's Life (1124)	1	1
Over 10 Years (149)	1.56 (0.43, 5.62)	0.97 (0.54, 1.75)
Less than 10 Years (213)	0.31 (0.17, 0.58)**	0.49 (0.32, 0.74)**
Missing (17)	0.25 (0.05, 1.28)	0.47 (0.13, 1.70)
Parental Employment Status		
Not Employed (507)	1	1
Mother Employed (178)	1.57 (0.50, 4.89)	1.05 (0.61, 1.81)
Father Employed (353)	1.08 (0.49, 2.35)	1.14 (0.74, 1.78)
Both Parents Employed (426)	0.91 (0.45, 1.85)	1.76 (1.10, 2.81)*
Missing (39)	0.22 (0.08, 0.64)**	0.39 (0.18, 0.86)*
Free School Meal		
Not Eligible (723)	1	1
Eligible (761)	0.69 (0.39, 1.23)	0.55 (0.38, 0.78)**
Missing (19)	0.89 (0.07, 11.30)	0.76 (0.17, 3.52)
Gender		
Male (783)	1	1
Female (720)	2.19 (1.19, 4.03)	2.08 (1.46, 2.98)**
Total Social Support		
Low (478)	1	1
Medium (480)	1.55 (0.78, 3.09)	1.34 (0.64, 2.84)
High (520)	1.99 (0.97, 4.11)	1.68 (0.98, 4.03)
Missing (25)	0.25 (0.08, 0.82)*	0.21 (0.10, 0.90)*
Friend Social Support		
Low (541)	1	1
Medium (411)	1.86 (0.88, 3.94)	1.28 (0.83, 1.97)
High (526)	1.79 (0.90, 3.55)	0.83 (1.85, 1.85)
Missing (25)	0.25 (0.08, 0.81)*	0.35 (0.13, 0.91)
Family Social Support		
Low (446)	1	1
Medium (500)	1.46 (0.70, 3.03)	1.03 (0.65, 1.64)
High (532)	1.22 (0.61, 2.43)	0.62 (0.41, 0.95)*
Missing (25)	0.21 (0.06, 0.72)*	0.25 (0.09, 0.68)**
Special Person Social Support 2		

	Low (501)	1	1
	Medium (415)	2.15 (0.96,4.85)	1.12 (0.71,1.77)
	High (562)	1.37 (0.72,2.62)	0.82 (0.55,1.23)
	Missing (25)	0.24 (0.07,0.78)*	0.29 (0.12,0.76)*
Total Social Support 2			
	Low (371)	1	1
	Medium (373)	1.68 (0.27,10.64)	0.14 (0.01,1.85)
	High (477)	0.58 (0.15, 2.27)	0.22 (0.02,2.99)
	Missing (282)	0.06 (0.02 ,0.18)**	0.00 (0.00,0.02)**
Friend Social Support 2			
	Low (382)	1	1
	Medium (364)	0.69 (0.11,4.22)	0.16 (0.01,2.18)
	High (475)	0.38 (0.08,1.81)	0.18 (0.02,2.32)
	Missing (282)	0.04 (0.01,0.15)**	0.00 (0.00,0.02)**
Family Social Support 2			
	Low (387)	1	1
	Medium (382)	2.85 (0.31,26.68)	0.52 (0.07,3.67)
	High (452)	0.45 (0.12, 1.73)	0.36 (0.06,2.22)
	Missing (282)	0.05 (0.02, 0.18)**	0.00 (0.00,0.02)**
Special Person Social Support 2			
	Low (402)	1	1
	Medium (328)	no missing values	3.62 (0.30,43.16)
	High (491)	1.24 (0.39,3.96)	0.82 (0.21, 3.27)
	Missing (282)	0.10 (0.04,0.24)**	0.01 (0.00, 0.03)**

6.2.2 Missing on Observed Data

The majority of pupils with missing data at baseline also had incomplete data on Wave II social support data. Table 6.2 displays the distribution of predictor, covariate and outcome variables for pupils with complete data (N=1125) and pupils with missing data (N=378). Compared with pupils with complete data, pupils with missing data included: a significantly higher proportion of Year 7 pupils (χ^2 (df=1, N = 1503) = 21.62 p < .01); a higher proportion of pupils born outside the UK (χ^2 (df=1, N=1491) = 22.35 p < .01); a significantly different ethnic composition (Cramer's V (N=1490) = 0.17 p < 0.01); a significant difference in the length of time pupils had been in the UK (Cramer's V (N=1486) = 36.23 p < 0.01); a higher proportion of pupils reporting parental employment (Cramer's V (N=1464) = 0.08 p < 0.04); a higher proportion of pupils without a family vehicle (Cramer's V (N=1500) = 0.07 p < 0.05); a higher proportion of male pupils (χ^2 (df = 1, N=1503) = 15.50 p < 0.01); a significantly higher proportion of pupils reporting a decrease in overall

support over time (Cramer's V (N=1467) = 0.10, p < 0.01) and a lower proportion of pupils eligible for free school meals (χ^2 (df=1, N =1484) = 14.97 p < 0.01).

Table 6.2 Frequency Distribution of Predictor, Covariate and Outcome Variables for Pupils Included in the Analysis and Pupils not Included in the Analysis.

	Included in Analysis (N=1125) % (N)	Excluded from Analysis due to Missing Data (N=378) % (N)
Year Group		
Year 7	48.1 (541)	61.9 (234)
Year 9	51.9 (584)	38.1 (144)
Country of Birth		
UK	83.4 (938)	72.1 (264)
Non-UK	16.6 (187)	27.9 (102)
		Missing 3.2 (12)
Ethnicity		
White UK	20.2 (227)	15.9 (58)
White Other	4.1 (46)	7.4 (27)
Bangladeshi	26.9 (303)	28.2 (103)
Pakistani	7.1 (80)	5.8 (21)
Asian Indian	10.8 (121)	5.8 (21)
Black	19.2 (216)	30.4 (111)
Mixed Race	6.2 (70)	4.9 (18)
Other	5.5 (62)	1.6 (6)
		Missing 3.4 (13)
Length of Time in the UK		
All of Pupil's Life	78.4 (882)	67.0 (242)
Over 10 Years	10.2 (115)	9.4 (34)
Less than 10 Years	11.4 (128)	23.6 (85)
		4.5 (17)
Parental Employment Status		
Not Employed	32.8 (369)	40.7 (138)
Mother Employed	12.1 (136)	12.4 (42)
Father Employed	24.8 (279)	21.8 (74)
Both Parents Employed	30.3 (341)	25.1 (85)
		Missing 10.3 (39)
Ownership of Vehicle		
No	27.6 (310)	34.7 (130)
One	51.8 (583)	48.3 (181)
Two or More	20.6 (232)	17.1 (64)
		Missing 0.8 (3)
SDQ Caseness R2		
Not a Case	93.0 (1046)	91.4 (301)
Case	7.0 (79)	8.6 (29)
		Missing 11.1 (42)
MFQ Caseness R2		
-Not a Case	81.3 (915)	82.0 (196)
Case	18.7 (210)	18.0 (43)
		36.8 (139)
Free School Meal		
Not Eligible	51.6 (580)	39.8 (143)

	Eligible	48.4 (545)	60.2 (216) Missing 5.0 (19)
Gender	Male	49.2 (553)	60.8 (230)
	Female	50.8 (572)	39.2 (148)
Total Social Support Change	Decrease	47.1 (530)	58.2 (199)
	Increase	47.7 (537)	39.8 (136)
	No Change	5.2 (58)	2.0 (7)
			Missing 9.5 (36)
Friend Social Support Change	Decrease	38.5 (433)	34.6 (28)
	Increase	47.4 (533)	55.6 (45)
	No Change	14.1 (159)	9.9 (8)
			Missing 78.6 (297)
Family Social Support Change	Decrease	48.2 (542)	53.1 (43)
	Increase	33.5 (377)	33.3 (27)
	No Change	18.3 (206)	13.6 (11)
			Missing 78.6 (297)
Special Person Social Support Change	Decrease	40.1 (451)	45.7 (37)
	Increase	45.6 (513)	37.0 (30)
	No Change	14.3 (161)	17.3 (14)
			Missing 78.6 (297)

6.3 Changes in Social Support between Baseline and Follow-up

As mentioned previously, changes in support may differ according to various sources of support and age. Before investigating the association between changes in social support overtime with mental health outcomes, trends in social support at baseline and follow-up are explored. This paints a clearer picture of how support changes overtime.

Table 6.3 illustrates that there is equal increase and decrease overtime in Total MSPSS scores. For the subscales of the MSPSS, almost half of the pupils reported an increase in support from friends (47.4%, N=533) and a special person (45.6%, N=513), yet only 18.3% (N=206) of pupils reported an increase in social support from their family. There was a significant increase in median friend support ($Z = -3.15$ (N=1125) $p < 0.01$); a significant increase in special person support ($Z = -2.23$

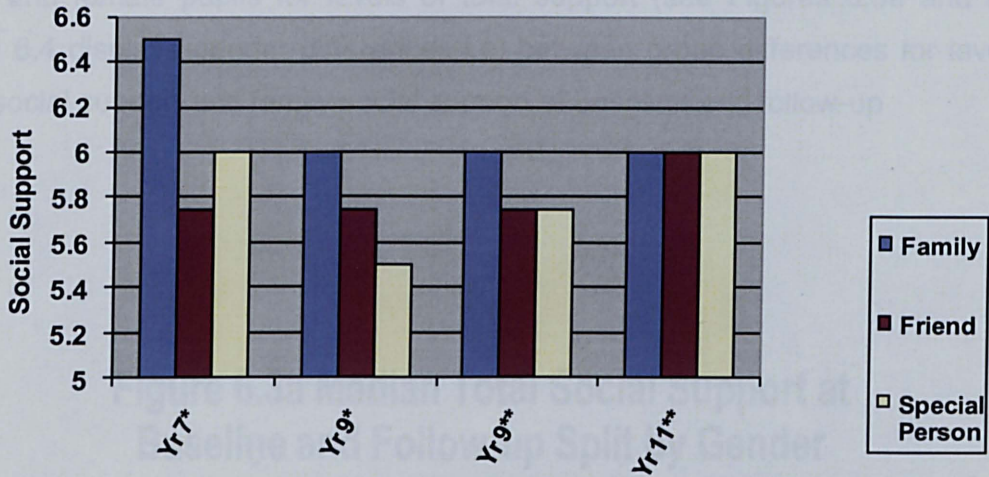
(N=1125) $p < 0.05$) and a significant decrease in median family support ($Z = -6.14$ (N=1125) $p < 0.01$) between baseline and follow-up.

Table 6.3 Categorical Changes in Social Support between Baseline and Follow-up

Changes in Social Support Overtime	% (N)
Total Social Support No Change Increase Decrease	5.2 (58) 47.7 (537) 47.1 (530)
Family Social Support No Change Increase Decrease	18.3 (206) 18.3 (206) 48.2 (542)
Friends Social Support No Change Increase Decrease	14.1 (159) 47.4 (533) 38.5 (433)
Special Person Social Support No Change Increase Decrease	14.3 (161) 45.6 (513) 40.1 (451)

Although there is an overall increase in friend and special person support and a decrease in family support overtime, figure 6.2 below illustrates levels of support reported by each age cohorts of the study at baseline and follow-up. As expected, Year 7 pupils reported the highest level of family support, but levels of family support remained the same for Year 9 pupils (both cohorts) and Year 11 pupils. Year 11 pupils reported higher levels of support from friends compared with younger pupils. Special person support was reported to be similar for Year 7 and Year 11 pupils, but lowest for pupils in Year 9 at baseline. Year 11 pupils reported similar levels of support from all three support sources measured by the MSPSS.

Figure 6.2 Median Social Support Shown by MSPSS Subscale and Split by Year Group



* Baseline

** Follow-up

Levels of family support significantly decrease overtime for the overall sample. Subsequent analyses in this section elaborate upon the finding that family support decreases overtime by investigating changes in family social support split by ethnicity and gender.

6.3.1 Changes in Social Support between Baseline and Follow-up Split by Gender

Analyses from Chapter 4 revealed that male and female pupils reported the same levels of family social support at baseline. Whilst investigating changes in levels of

social support between baseline and follow-up, it can be observed that there are no differences by gender for levels of family social support at follow-up. Both female and male pupils display exactly the same median levels of family social support at baseline and follow-up. However, there were significant group differences between male and female pupils for levels of total support (see Figures 6.3a and 6.3b). Table 6.4 displays gender differences i.e. between group differences for levels of total social support and family social support at baseline and follow-up

Figure 6.3a Median Total Social Support at Baseline and Follow-up Split by Gender

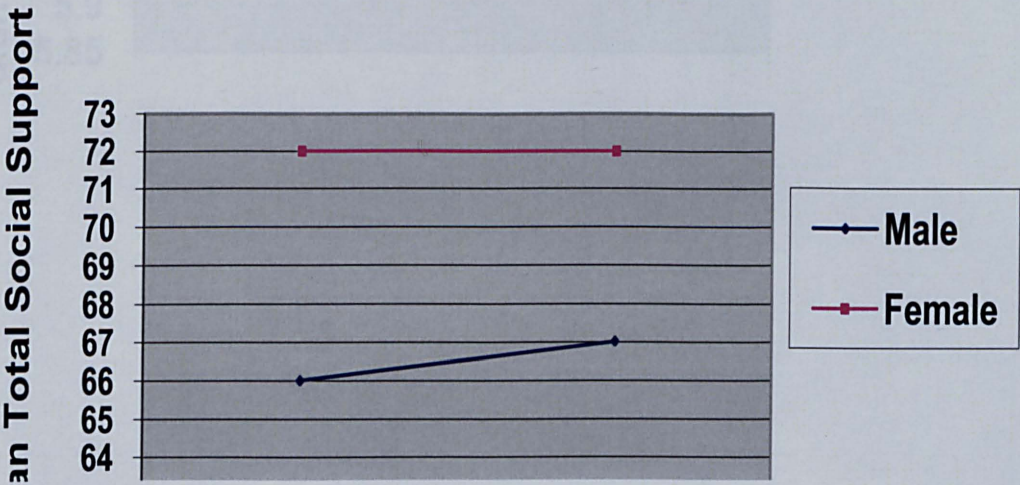


Figure 6.3b Median Family Social Support at Baseline and Follow-up Split by Gender

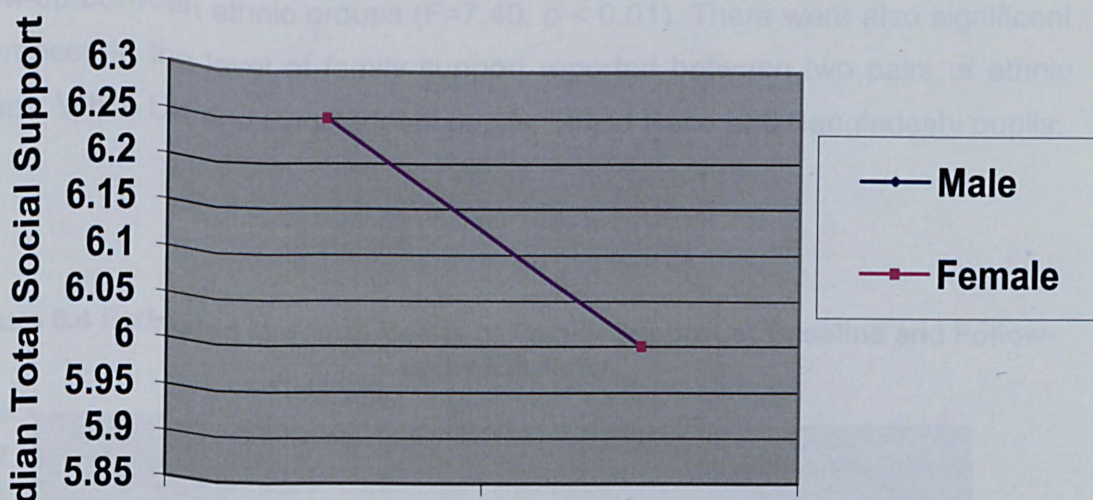


Table 6.4 Between Group Differences Between Male and Female Pupils for Levels of Total Social Support and Family Social Support at Baseline and Follow-up.

	Between Group Difference Mann-Whitney U Test (Z)	
	Total Social Support	Family Support
Between Group Difference at Baseline	-7.51**	-1.59
Between Group Difference at Follow-up	-5.95**	-0.35

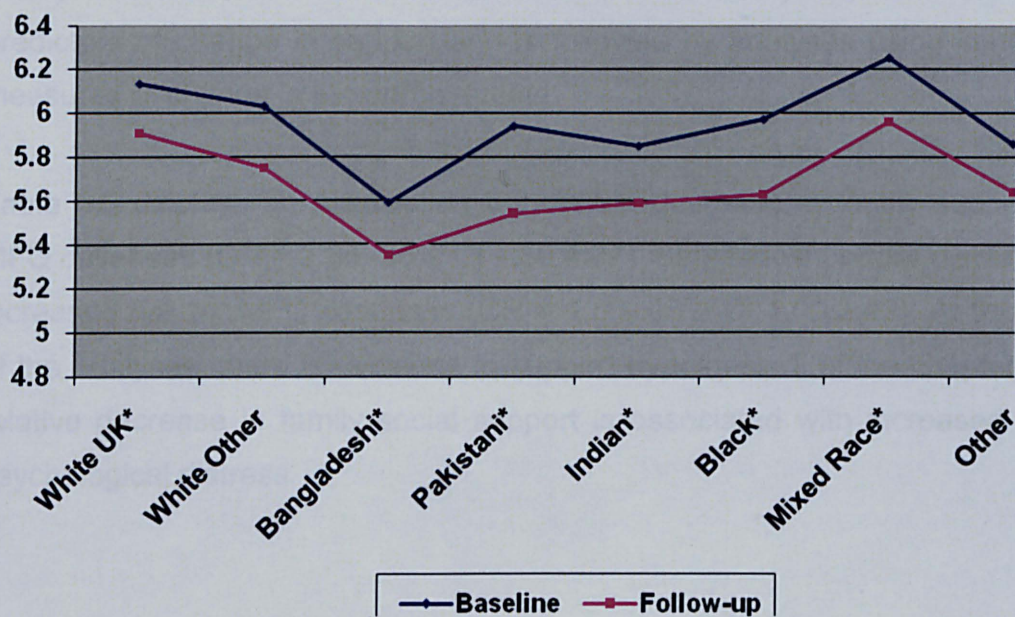
*p<0.05, **p<0.01

6.3.2 Changes in Social Support Between Baseline and Follow-up Split by Ethnicity

Lower levels of family social support at follow-up were reported by pupils in all ethnic groups. Figure 6.4 below displays estimated marginal means of family support at baseline and follow-up by ethnicity. Follow-up levels of social support mirrored baseline levels of family social support for each ethnic group.

There were significant differences in the level of family support reported at follow-up between ethnic groups ($F=7.40$, $p < 0.01$). There were also significant differences in the level of family support reported between two pairs of ethnic groups: White UK and Bangladeshi pupils; Mixed Race and Bangladeshi pupils.

Figure 6.4 Estimated Marginal Means of Family Support at Baseline and Follow-up by Ethnicity



Significant within ethnic group difference overtime, $p < 0.05$

6.3.3 Section Summary

Overall, the findings above illustrate that there is significant decrease overtime in levels of family social support. This pattern is evident by gender, age and through all ethnic groups.

6.4 Unadjusted Regression Analyses: Predicting MFQ Caseness By Changes in Support Overtime

Hypothesis 6) A relative decrease in family social support overtime is associated with depressive symptoms measured as MFQ Caseness and psychological distress measured by the SDQ at 2-year follow-up.

Logistic regression analyses explored the association between changes in support overtime with psychological distress or depressive symptoms as a binary outcome measure. These initial set of analyses uses categorical predictors of change in support and is followed by analyses using continuous measures of change in support overtime.

Table 6.5 displays an association between a decrease in family support with MFQ caseness (OR = 2.35, 95% CI 1.30,4.27). Bangladeshi pupils displayed an increased risk for MFQ caseness (OR = 1.56, 95% CI 1.00,2.43). At this stage of the analyses, there is evidence to support hypothesis 2 of the chapter that a relative decrease in family social support is associated with increased risk of psychological distress.

Table 6.5 Odds Ratios and Confidence Intervals for MFQ Caseness at Phase II from Change in Social Support Scores and Ethnicity.

	MFQ Caseness Phase II	
	Unadjusted Social Support Odds Ratio For MFQ Caseness	Unadjusted Ethnicity Odds Ratio For MFQ Caseness
Friends		
No change (159)	1	
Decrease (433)	1.42 (0.87,2.32)	
Increase (533)	1.21 (0.75,1.97)	
Family		
No change (206)	1	
Decrease (542)	<u>2.62 (1.61,4.26)*</u>	
Increase (377)	1.56 (0.93,2.63)	
Special Person		
No change (161)	1	
Decrease (451)	1.02 (0.64,1.62)	
Increase (513)	0.96 (0.61,1.51)	
Total Social Support		
No change (58)	1	
Decrease (530)	1.13 (0.57,2.25)	
Increase (537)	0.84 (0.42,1.68)	
Ethnicity		
White UK (227)		1
White Non-UK (46)		1.75 (0.82,3.72)
Bangladeshi (303)		<u>1.56 (1.00,2.43)*</u>
Pakistani (80)		1.36 (0.70,2.61)
Asian Indian (121)		1.38 (0.78,2.43)
Black (216)		0.66 (0.38,1.15)
Mixed Race (70)		1.83 (0.96,3.47)
Other (62)		1.15 (0.55,2.40)

*p<0.05

The analyses presented above indicate whether an absolute, as opposed to a relative, decrease in family social support overtime is associated with depressive symptoms at follow-up. Entering baseline level of family support (as a continuous variable) into the regression model would be one method by which a relative change in family support could be considered.

An additional methodological limitation remains with the analyses above. This problem is associated with the use of measuring change as a categorical construct, where the measurement of change as a categorical variable does not account for degree of variation of levels of social support within a category. It is

more suitable therefore, to use a continuous measure of change in the regression models.

A significant association between a decrease in family support and MFQ caseness was found in previous analyses and this finding was supported when change in family support was entered into the regression model as a continuous variable (OR = 0.76, 95% CI 0.69,0.85). An decrease in overall support was also associated with an higher risk of being defined as an MFQ case at follow-up (OR = 0.99, 95% CI 0.98, 0.99; see figures 6.5 and 6.6)

Table . 6.6 Odds Ratios and Confidence Intervals for MFQ Caseness at Phase II from Change in Social Support Scores and Ethnicity.

Social Support	MFQ caseness Phase II
	Unadjusted Social Support Odds Ratio For MFQ Caseness
Friends	0.95 (0.86,1.05)
Family	<u>0.76 (0.69,0.85)**</u>
Special Person	0.97 (0.88,1.07)
Total Social Support	<u>0.99 (0.98,0.99)**</u>

Figure 6.5 Change in Family Support Over Time Split by MFQ Caseness

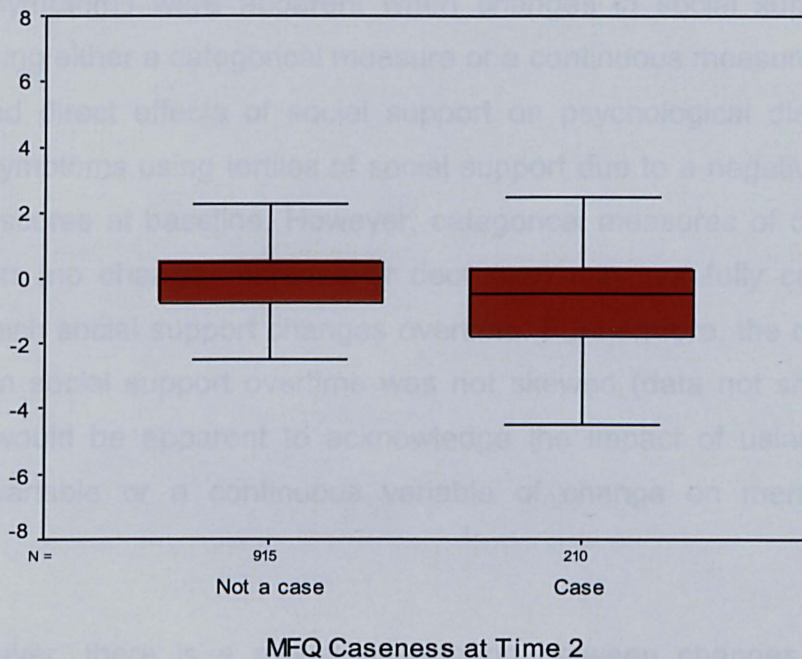
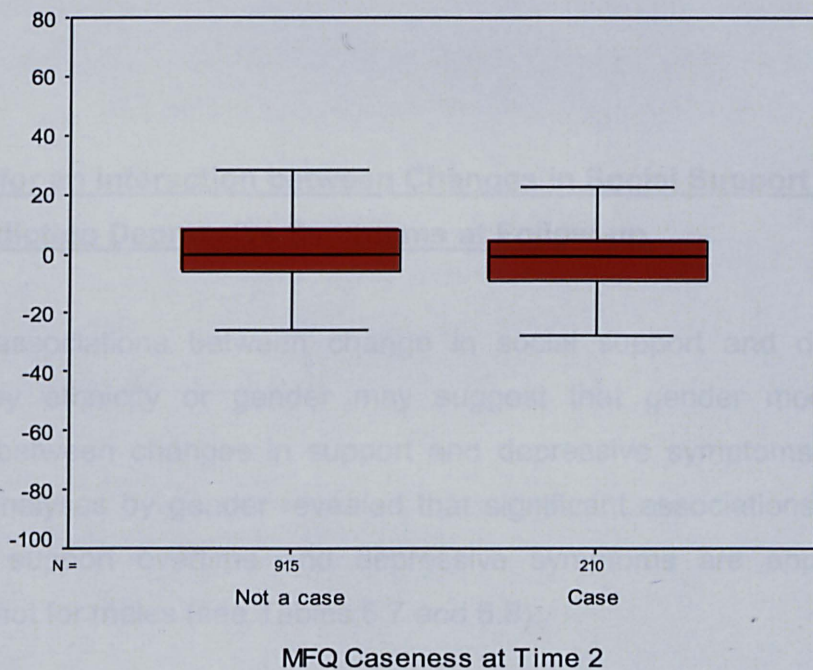


Figure 6.6 Change in Total Support Over Time Split by MFQ Caseness



6.4.1 Section Summary

Significant associations between changes in social support overtime with depressive symptoms were apparent when changes in social support were measured using either a categorical measure or a continuous measure. Chapter 4 investigated direct effects of social support on psychological distress and depressive symptoms using tertiles of social support due to a negative skew in raw support scores at baseline. However, categorical measures of changes in social support (no change, increase or decrease) may not fully capture the degree to which social support changes overtime. Furthermore, the distribution of changes in social support overtime was not skewed (data not shown) and therefore it would be apparent to acknowledge the impact of using either a categorical variable or a continuous variable of change on mental health outcomes.

So far, however, there is a robust association between changes in family support and depressive symptoms. A continuous measure of support revealed an association between change in family support and MFQ caseness at follow-up.

6.5 Testing for an Interaction between Changes in Social Support and Gender Predicting Depressive Symptoms at Follow-up.

Differential associations between change in social support and depressive symptoms by ethnicity or gender may suggest that gender modifies the association between changes in support and depressive symptoms. Splitting correlation analyses by gender revealed that significant associations between changes of support overtime and depressive symptoms are apparent for females but not for males (see Tables 6.7 and 6.8).

Table 6.7 Pearson Correlation Coefficients between Social Support and MFQ Scores at Follow-up for Male Pupils

	Change in Social Support Score Over-Time For Male Pupils			
	Family T2-T1	Friends T2-T1	Special Person T2-T1	Total Support T2-T1
MFQ Scores at Follow-up	-0.03	0.01	-0.03	-0.02

Table 6.8 Pearson Correlation Coefficients between Social Support and MFQ Scores at Follow-up for Female Pupils

	Change in Social Support Score Over-Time For Female Pupils			
	Family T2-T1	Friends T2-T1	Special Person T2-T1	Total Support T2-T1
MFQ Scores at Follow-up	-0.25**	-0.12**	-0.04	-0.17**

**p<0.01

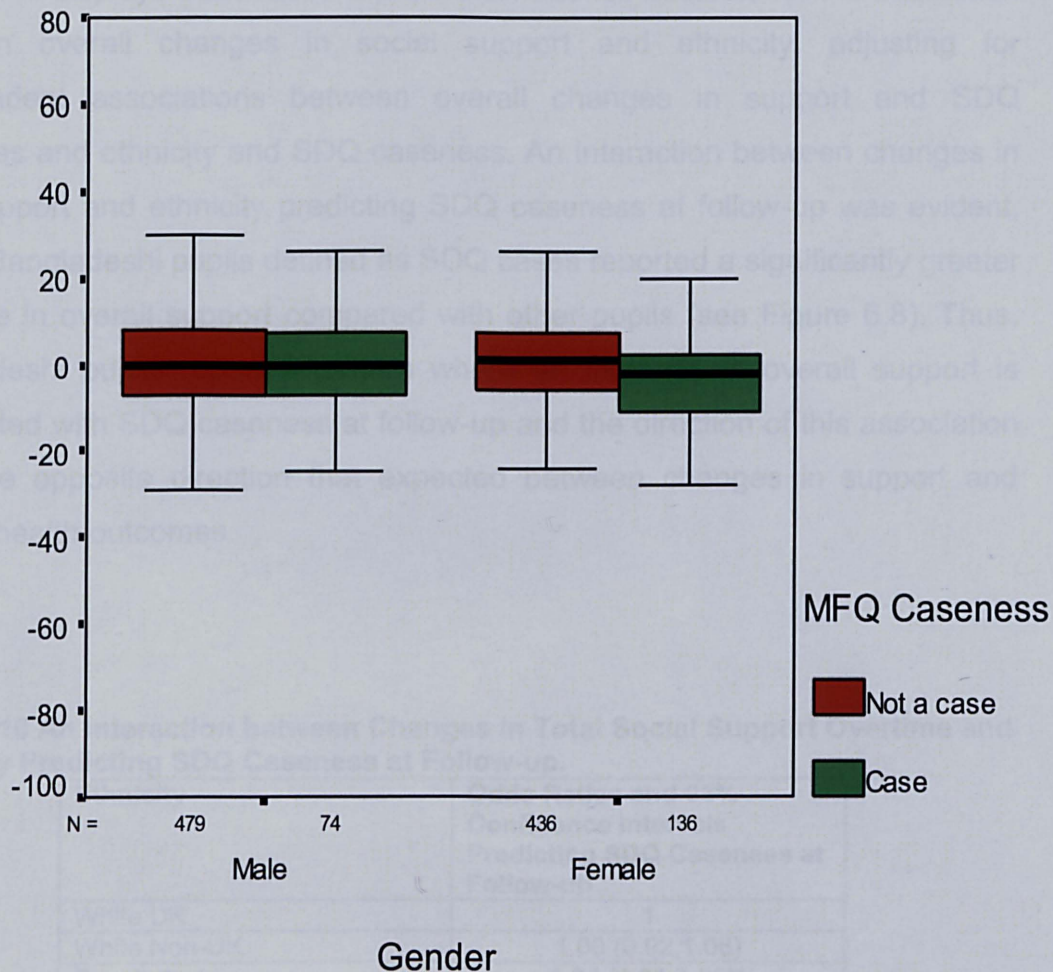
Table 6.9 displays odds ratios and 95% confidence intervals for the interaction between changes in social support (total MSPSS and subscales) and gender, adjusting for independent associations between support and depressive symptoms and gender and depressive symptoms. Female pupils defined as MFQ cases at follow-up were significantly more likely to report a decrease in total support, friend and family support overtime compared with male pupils. Figure 6.7 illustrates the interaction between changes in total social support overtime with MFQ caseness.

Table 6.9 An Interaction between Changes in Total Social Support Overtime and Gender Predicting MFQ Caseness at Follow-up.

	Total Social Support	Friend Social Support	Family Social Support	Special Person Social Support
Female	1	1	1	1
Male	1.03 (1.01,1.06)**	1.31 (1.06,1.62)**	1.38 (1.12,1.73)**	1.11 (0.91,1.36)

**p<0.01

Figure 6.7 Change in Overall Support overtime split by MFQ Caseness and Gender



Hypothesis 3 stated that low levels of family social support are significantly associated with depressive symptoms at follow-up for female pupils, but not for male pupils. This hypothesis is supported.

6.6 Testing for an Interaction Between Changes in Social Support and Ethnicity Predicting Psychological Distress at Follow-up.

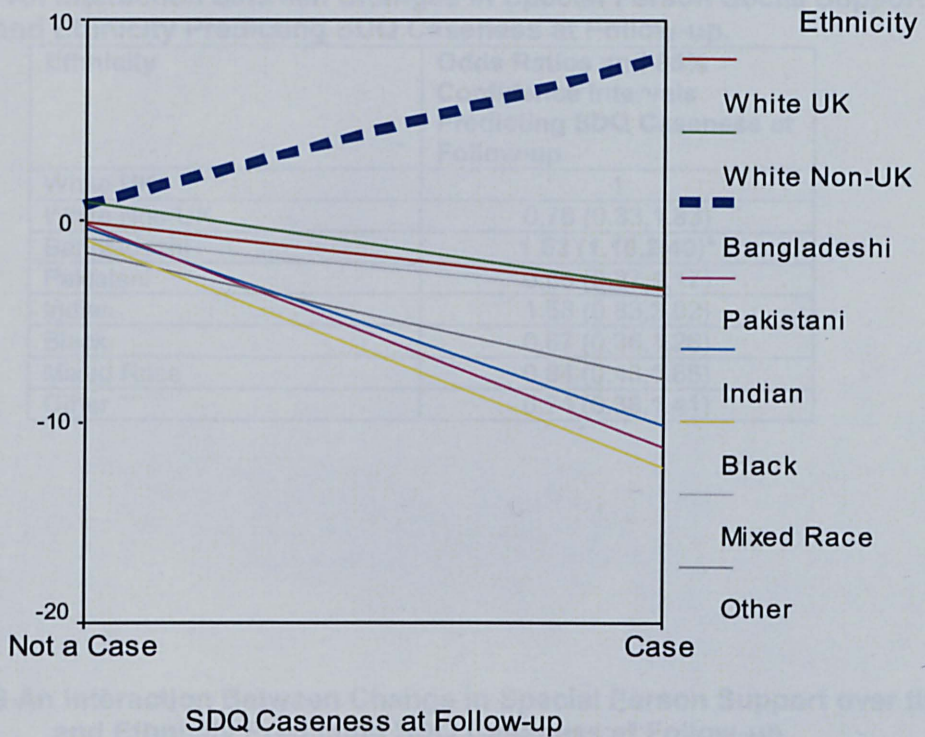
Table 6.10 displays odds ratios and 95% confidence intervals for the interaction between overall changes in social support and ethnicity, adjusting for independent associations between overall changes in support and SDQ caseness and ethnicity and SDQ caseness. An interaction between changes in total support and ethnicity predicting SDQ caseness at follow-up was evident, where Bangladeshi pupils defined as SDQ cases reported a significantly greater increase in overall support compared with other pupils (see Figure 6.8). Thus, Bangladeshi pupils report a pattern where an increase in overall support is associated with SDQ caseness at follow-up and the direction of this association is in the opposite direction that expected between changes in support and mental health outcomes.

Table 6.10 An Interaction between Changes in Total Social Support Overtime and Ethnicity Predicting SDQ Caseness at Follow-up.

Ethnicity	Odds Ratios and 95% Confidence Intervals Predicting SDQ Caseness at Follow-up
White UK	1
White Non-UK	1.00 (0.92,1.08)
Bangladeshi	1.04 (1.01,1.08)*
Pakistani	0.95 (0.89,1.02)
Indian	0.94 (0.86,1.03)
Black	0.97 (0.92,1.02)
Mixed Race	1.00 (0.93,1.07)
Other	0.99 (0.92,1.06)

p<0.05

Figure 6.8 An interaction Between Change in Overall Support Overtime and Ethnicity Predicting SDQ Caseness at Follow-up



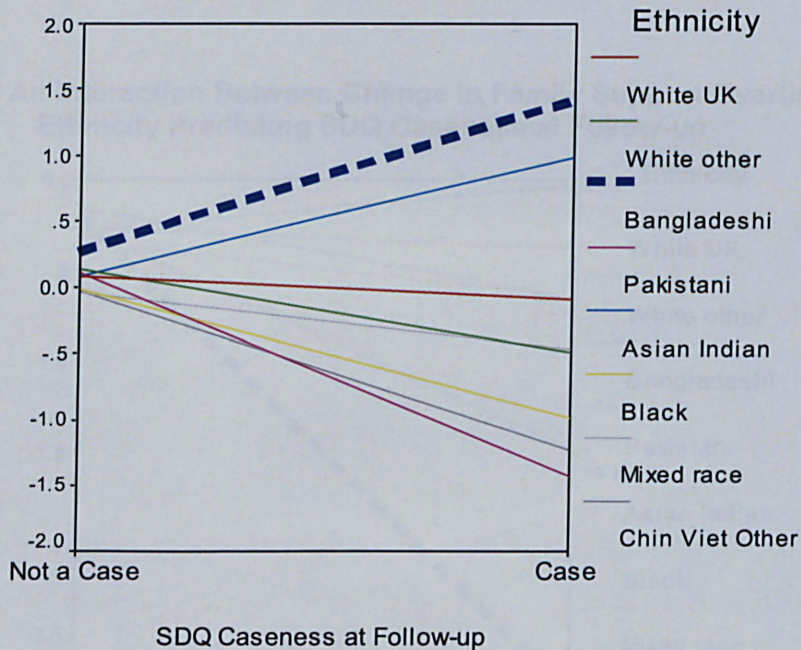
Bangladeshi pupils also displayed an interaction between changes in special person support overtime and SDQ caseness compared with other pupils. Table 6.11 displays odds ratios and 95% confidence intervals for the interaction between changes in special person social support and ethnicity, adjusting for independent associations between changes in special person support and SDQ caseness and ethnicity and SDQ caseness. Bangladeshi pupils defined as SDQ cases reported a significantly greater increase in special person support compared with other pupils (see Figure 6.9).

Table 6.11 An Interaction between Changes in Special Person Social Support Overtime and Ethnicity Predicting SDQ Caseness at Follow-up.

Ethnicity	Odds Ratios and 95% Confidence Intervals Predicting SDQ Caseness at Follow-up
White UK	1
White Non-UK	0.78 (0.33,1.83)
Bangladeshi	1.63 (1.10,2.40)*
Pakistani	0.66 (0.37,1.17)
Indian	1.58 (0.83,3.02)
Black	0.67 (0.36,1.26)
Mixed Race	0.84 (0.43,1.68)
Other	0.74 (0.38,1.41)

p<0.05

Figure 6.9 An interaction Between Change in Special Person Support over time and Ethnicity Predicting SDQ Caseness at Follow-up



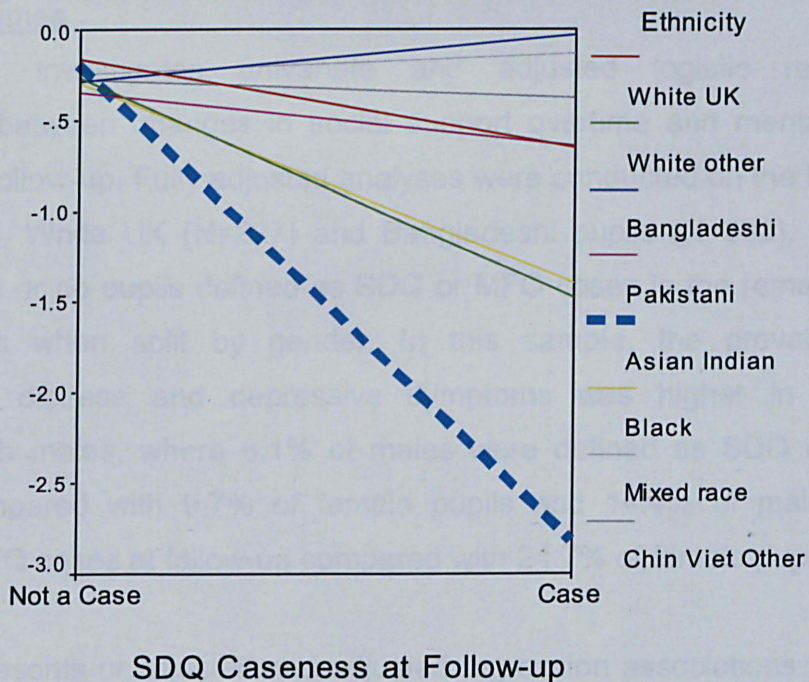
An additional interaction was present between changes in family support overtime and SDQ caseness at follow-up, where Indian pupils defined as SDQ cases at follow-up were significantly more likely to report an increase in family support overtime compared with other pupils (see Table 6.12 and figure 6.10).

There were no additional significant interaction associations between changes in social support over time and ethnicity predicting mental health outcomes at follow-up.

Table 6.12 An Interaction between Changes in Family Social Support overtime and Ethnicity Predicting SDQ Caseness at Follow-up.

Ethnicity	Odds Ratios and 95% Confidence Intervals Predicting SDQ Caseness at Follow-up
White UK	1
White Non-UK	0.66 (0.29,1.51)
Bangladeshi	1.41 (0.96,2.08)
Pakistani	1.09 (0.57,2.12)
Indian	0.36 (0.15,0.88)*
Black	0.84 (0.49,1.43)
Mixed Race	1.50 (0.56,4.04)
Other	1.20 (0.48,2.99)

Figure 6.10 An Interaction Between Change in Family Support Overtime and Ethnicity Predicting SDQ Caseness at Follow-up



6.6.1 Section Summary

A significant interaction between changes in social support and gender predicting SDQ or MFQ caseness warrants the remaining regression analyses to be split by gender.

This chapter posed the question that there might be an interaction between a change in social support and ethnicity predicting psychological distress or depressive symptoms at 2-year follow-up. Indian pupils reporting a decrease in family support overtime were significantly more likely to be defined as an SDQ case at follow-up compared with other pupils. Surprisingly however, Bangladeshi pupils reporting an increase in special person support were significantly more likely to be defined as an SDQ case at follow-up. The interaction between changes in support and ethnicity will be entered into fully adjusted regression models in the following section.

6.7 Adjusted Associations between Changes in Social Support and Mental Health Outcomes

This section investigates univariate and adjusted logistic regression associations between changes in social support overtime and mental health outcomes at follow-up. Fully adjusted analyses were conducted on the two main ethnic groups, White UK (N=227) and Bangladeshi pupils (N=303), as there were very few or no pupils defined as SDQ or MFQ cases in the remaining six ethnic groups when split by gender. In this sample, the prevalence of psychological distress and depressive symptoms was higher in females compared with males, where 8.1% of males were defined as SDQ cases at follow-up compared with 9.7% of female pupils and 14.4% of males were defined as MFQ cases at follow-up compared with 24.7% of female pupils.

Table 6.13 presents unadjusted and adjusted regression associations between changes in social support overtime (total and subscales) and SDQ caseness at

follow-up for male pupils. Regression coefficients between ethnicity and SDQ caseness at follow-up are also presented in table 6.13. Adjusted models include an interaction between changes in special person support overtime and ethnicity and an interaction between changes in total support overtime and ethnicity. Length of time in the UK was not included in the adjusted model due to few numbers for this variable. An increase in special person support and overall support overtime was significantly associated with SDQ caseness at follow-up. Adjusting for the interaction between change in special person support and ethnicity made the association between changes in special person support and SDQ caseness non-significant. Similarly, adjusting for the interaction between change in overall support and ethnicity made the association between change in overall support and SDQ caseness non-significant.

In order to minimise the possibility of reverse causality, these analyses excluded pupils who were defined as either an SDQ or MFQ case at baseline. It is also worth adjusting for baseline continuous scores of the SDQ and MFQ as this further reduces the possibility of reverse causality. The odds ratios and 95% confidence intervals for SDQ caseness at follow-up is displayed in the fourth column in Tables 6.13 and 6.14 after further adjustment for baseline continuous scores of the SDQ and MFQ scores. It can be seen that further adjustment for baseline sub-syndromal scores of the SDQ and MFQ do not change the significance of the association between changes in social support overtime predicting SDQ caseness at follow-up.

Table 6.13 Unadjusted and Adjusted Odds Ratios and Confidence Intervals Predicting SDQ caseness from Change in Support Overtime

Male Pupils	SDQ Caseness Phase II			
	Unadjusted Social Support Odds Ratio For SDQ caseness	Unadjusted Ethnicity Odds Ratio For SDQ caseness	Social Support and Ethnicity Odds Ratios For SDQ caseness*	Social Support and Ethnicity Odds Ratios For SDQ caseness – further adjustment for baseline sub-syndromal SDQ and MFQ scores
Friends	1.18 (0.91,1.54)		1.06 (0.69,1.63)	1.09 (0.71,1.69)
Family	1.13 (0.86,1.49)		0.87 (0.62,1.25)	0.84 (0.59,1.18)
Special Person	1.50 (1.16,1.94)*		0.91,0.56,1.47)	0.90 (0.53,1.53)
Total Social	1.03 (1.00,1.06)*		0.98 (0.94,1.01)	0.98 (0.94,1.02)
Ethnicity				
White UK (116)		1	1	1
Bangladeshi		0.84 (0.35,1.99)	0.28 (0.07,1.09)	0.31 (0.08, 1.22)

* Adjusted models were adjusted for age, socio-economic status (eligibility for free school meals, parental employment status, parental ownership of vehicle), country of birth, length of time in the UK and an interaction between social support and ethnicity

There were no significant associations between changes in social support overtime with SDQ caseness at follow-up for female pupils (see Table 6.14)

Table 6.14 Unadjusted and Adjusted Odds Ratios and Confidence Intervals Predicting SDQ Caseness from Change in Support Overtime

Female Pupils	SDQ Caseness Phase II			
	Unadjusted Social Support Odds Ratio For SDQ Caseness	Unadjusted Ethnicity Odds Ratio For SDQ Caseness	Social Support and Ethnicity Odds Ratios For SDQ Caseness	Social Support and Ethnicity Odds Ratios For SDQ caseness – further adjustment for baseline sub-syndromal SDQ and MFQ scores
Friends	0.92 (0.67,1.27)		0.95,0.59,1.52)	0.95 (0.57, 1.62)
Family	0.84 (0.64,1.09)		0.71 (0.48,1.03)	0.69 (0.42, 1.02)
Special Person	0.98 (0.73,1.31)		1.60 (0.81,3.18)	1.66 (0.85,3.26)
Total Social	0.99 (0.96,1.02)		1.01 (0.95,1.09)	1.01 (0.95,1.08)
Ethnicity				
White UK (111)		1	1	1
Bangladeshi (148)		0.89 (0.39,2.05)	1.13 (0.35,3.67)	1.33 (0.38,4.73)

* Adjusted models were adjusted for age, socio-economic status (eligibility for free school meals, parental employment status, parental ownership of vehicle), country of birth, length of time in the UK and an interaction between social support and ethnicity

Table 6.15 displays non-significant unadjusted and adjusted regression associations between changes in social support overtime (total and subscales) and MFQ caseness at follow-up for male pupils. Changes in social support overtime were not associated with MFQ caseness at follow-up for male pupils in unadjusted or adjusted models.

Table 6.15 Unadjusted and Adjusted Odds Ratios and Confidence Intervals Predicting MFQ Caseness from Change in Support Overtime

Male Pupils	MFQ Caseness Phase II			
	Unadjusted Social Support Odds Ratio For MFQ Caseness	Unadjusted Ethnicity Odds Ratio For MFQ Caseness	Social Support and Ethnicity Odds Ratios For MFQ Caseness	Social Support and Ethnicity Odds Ratios For MFQ caseness – further adjustment for baseline sub-syndromal SDQ and MFQ scores
Friends	1.05 (0.85,1.28)		1.16 (0.87,1.55)	1.23 (0.92, 1.66)
Family	0.94 (0.76,1.16)		0.82 (0.62,1.08)	0.84 (0.64, 1.10)
Special Person	1.00 (0.83,1.22)		0.90 (0.68,1.18)	0.91 (0.66, 1.19)
Total Social	1.00 (0.98,1.02)		0.99 (0.97,1.01)	0.98 (0.96, 1.02)
Ethnicity				
White UK (116)		1	1	1
Bangladeshi (155)		1.33 (0.67,2.66)	1.38 (0.55,3.46)	1.48 (0.59,3.92)

* Adjusted models were adjusted for age, socio-economic status (eligibility for free school meals, parental employment status, parental ownership of vehicle), country of birth, length of time in the UK.

For female pupils, unadjusted changes in friends support, family support and total support overtime were significantly associated with MFQ caseness at follow-up. The association between a decrease in friends support overtime and a risk in being defined as MFQ caseness at follow-up was non-significant when change in special person support and change in family support were included in the model. Pupils defined as Bangladeshi female displayed an increased risk of MFQ caseness compare with White females. This association became significant when baseline level of social support was entered into the model, strengthening findings from Chapter 4, suggesting that baseline total support is associated with depressive symptoms. The associations between changes overtime in social support and MFQ caseness at follow-up for female pupils was not significantly altered once baseline sub-syndromal scores of the SDQ and MFQ were entered into the adjusted regression models. Odds ratios and confidence intervals for MFQ caseness at follow-up for female pupils once baseline sub-syndromal scores of the SDQ and MFQ are entered into the adjusted regression models are displayed in the last column of Table 6.16.

Table 6.16 Unadjusted and Adjusted Odds Ratios and Confidence Intervals Predicting MFQ Caseness from Change in Support Overtime

Female Pupils	MFQ Caseness Phase II			
	Unadjusted Social Support Odds Ratio For MFQ Caseness	Unadjusted Ethnicity Odds Ratio For MFQ Caseness	Social Support and Ethnicity Odds Ratios For MFQ Caseness	Social Support and Ethnicity Odds Ratios For MFQ caseness – further adjustment for baseline sub-syndromal SDQ and MFQ scores
Friends	0.76 (0.61,0.96)*		0.88 (0.63,1.21)	0.84 (0.60,1.17)
Family	0.68 (0.56,0.83)**		0.61 (0.47,0.79)**	0.61 (0.47, 0.79)**
Special Person	0.92 (0.75,1.12)		1.12 (0.85,1.47)	1.19 (0.71, 2.03)
Total Social	0.97 (0.95,0.99)**		0.96 (0.93,0.98)**	0.97 (0.93,0.99)**
Ethnicity				
White UK (111)		1	1	1
Bangladeshi (148)		1.79 (0.99,3.23)	2.52 (1.06,6.01)*	2.15 (1.03,5.28)*

* Adjusted models were adjusted for age, socio-economic status (eligibility for free school meals, parental employment status, parental ownership of vehicle), country of birth, length of time in the UK.

6.7.1 Section Summary

These analyses revealed differential effects of change in social support overtime by gender. For male pupils, a univariate association between an increase in special person support was significantly associated with SDQ caseness at follow-up. Adjusting for an interaction between changes in special person support and ethnicity made the association non-significant. Furthermore, the odds ratio and 95% confidence intervals for changes in special person support for Bangladeshi pupils is OR = 3.88, 95% CI 1.96,7.65. Therefore, an increase in special person support was significantly associated with SDQ caseness for Bangladeshi pupils only. Similarly, adjusting for the interaction between overall change in support with ethnicity made the association between an increase in total support and SDQ caseness non-significant suggesting that an increase in total support is associated with SDQ caseness for Bangladeshi pupils only.

Compared with male pupils, females displayed a greater risk of being defined as an MFQ case at follow-up. A change in friends support was not an independent risk factor for depressive symptoms once changes in special person and family support overtime were entered into the regression model. However, these analyses suggest that a decrease in family support overtime is associated with depressive symptoms for female pupils.

Compared with White UK females, Bangladeshi females displayed an increased risk of being defined as an MFQ case once baseline total support was entered into the regression model, suggesting that depressive symptoms for Bangladeshi pupils are associated with baseline support rather than a change in support overtime.

Discussion of the Findings

Chapter 7

7.1 Overview of the Discussion

This chapter presents a discussion of the main findings highlighted in Chapters 4 - 6. Firstly, the RELACHS study sample is compared with adolescent samples in the existing research. The main body of the chapter provides a discussion of the findings in relation to previous findings in the literature. This Chapter concludes by highlighting limitations of the findings and implications for future research.

7.2 A Summary of the Main Findings of the Thesis

This thesis intended to explore the role of socio-cultural factors, chiefly social support and friendship choices as risk factors for mental health outcomes in a culturally plural community. Adolescents in East London stem from an economically deprived and ethnically diverse background. Given the uncertain evidence regarding social support mitigating ethnic variations in mental health outcomes, or whether high levels of social support are a proxy for culturally similar friendship choices, East London offers an informative environment to investigate social support and friendship choices in adolescents.

This thesis found significant ethnic variations in psychological distress and depressive symptoms at follow-up. Although low levels of family support at baseline were associated with depressive symptoms at follow-up, baseline family social support (or friend support, or special person support) or changes in any of the subscales of social support over time could not account for ethnic variations in either psychological distress, or depressive symptoms. Further analyses based on three ethnic groups highlighted that culturally similar friendship choices are protective for Bangladeshi pupils. Interestingly, adjusting for friendship choices accounted for lower risk of psychological distress amongst Bangladeshi male pupils. However, low levels of psychological

distress amongst Black pupils compared with White UK pupils remained once covariate variables were adjusted for.

It is essential to point out that several findings of this thesis corroborate existing research in the field. In accordance with previous research in the field, females reported higher levels of psychological distress and depressive symptoms compared with male pupils (Sweeting and West, 2003). Furthermore, many authors have found a prospective association between low levels of family social support and depressive symptoms during adolescence (Lewinsohn *et al.*, 1993). This thesis supplemented the existing research in the field by examining the association between changes in social support over time with mental health outcomes.

How can these findings be interpreted? One could argue that findings in this thesis challenge the assumption that social support can account for ethnic variations in mental health outcomes and challenge the sentiment that membership of a particular minority group may operate particular protective characteristics upon minority individuals (e.g. Costello *et al.*, 1997). This and additional issues are addressed in this discussion in an attempt to appreciate the meaning of the findings. This chapter discusses the main issues emerging from the thesis with reference to methodological limitations and the nature of sample selected for the study.

7.3 Comparability of the RELACHS Study to the Existing Research

Before discussing how far the findings from this thesis contribute to the existing knowledge in the field, I evaluate the comparability of the RELACHS Study to the research evaluated in the literature review chapter of the thesis based on comparability of sample characteristics and measures.

It is clear that the samples in the studies selected for review (see Chapter 2) and the study sample in the current study were not similar with respect to ethnicity. Comparability of findings is problematic amongst different or even the same ethnic groups cross-nationally (Pirkis *et al.*, 2003), yet for the purpose of

evaluating the relevance of the current findings in relation to the existing research, it is necessary to draw attention to sample differences in the studies.

To the best of my knowledge, there are no existing research findings which have prospectively investigated the effects of social support and friendship choices in an ethnically diverse study population. An ethnically diverse and highly socioeconomically deprived sample provides an opportunity to investigate whether social support (often assumed to be associated with minority membership) can account for lower levels of psychological distress amongst particular minority members in the face of socioeconomic adversities. After all, the evidence in Chapter 2 of this thesis reviewed the finding that buffering effects of social support were apparent amongst Native Hawaiian adolescents (Goebert *et al.*, 2000) and cross-sectional findings from the RELACHS study highlighted lower levels of psychological distress amongst Bangladeshi pupils (Stansfeld *et al.*, 2004). The characteristics of East London and the previous research findings led to the development of the current thesis's aims and hypotheses that have been investigated in this study.

7.3.1 The Context of Pupils in the RELACHS Study Compared with Existing Research

With the exception of the Native Hawaiian Mental Health Research Development Program (Andrade *et al.*, 1994), the majority of the studies selected for review included predominantly indigenous White adolescents. Therefore non-White groups were in the minority and this was not the case with the RELACHS study. The ethnic composition of East London is vastly different to the UK as a whole. In the 2001 census (Census, 2002), the number of non-White individuals in England totalled 13% of the population. The total population of Bangladeshis in England totalled 0.5%. This figure is in stark contrast to the high proportion of Bangladeshis in the London borough of Tower Hamlets (33.4% of the population in Tower Hamlets). Although East London is densely populated with non-White individuals, it is unclear how non-White pupils in this study perceive their minority status within a wider socio-cultural context. Could the forces in the macro system (Bronfenbrenner, 1979), such as the media, or

the sheer membership in an ethnic minority in a wider geographical environment (i.e. in the UK), counteract the presence of ethnic density in the local area? This issue remains unknown, yet should be considered whilst interpreting the results.

With regards to methodological differences in measuring ethnicity, though some of the studies in the literature review chapter of the thesis included a sizeable proportion of non-White adolescents, crude classification of ethnic groups was apparent in some of the studies included in the literature review. For example, 32% of pupils in the Add Health Study represented non-White individuals, however, these pupils were grouped into one 'non-White' group for the purpose of analysis (Rushton *et al.*, 2002). The Native Hawaiian Mental Health Research Development Program (Andrade *et al.*, 1994) reported ethnic variations in psychological distress. However, authors from this study also based analyses on two main ethnic groups: Hawaiian and non-Hawaiian. The non-Hawaiian group (constituting 40% of the study sample) were a highly ethnically heterogeneous group consisting of Japanese, Mixed Filipino, Caucasian, African, Chinese, Korean and Samoan pupils who were classified into one. On the other hand, the RELACHS study sample in East London represented an ethnically diverse sample. East London is densely populated with individuals from a minority ethnic background and is largely occupied by members of the Bangladeshi community. Pupils from the RELACHS Study were drawn mainly from White UK, Bangladeshi and Black adolescents, and also included adolescents with White non-UK, Indian, Pakistani, Mixed Race and Other ethnic backgrounds.

In addition to sample differences between the previous research and the RELACHS study, differences between the measures used in the studies reviewed in Chapter 2 and the RELACHS study highlighted theoretical discrepancies in the measurement of particular constructs. For example, authors from the Native Hawaiian Mental Health Research Development Program categorised pupils as either traditional or non-traditional with respect to Native Hawaiian culture, thus assuming a unidirectional model of acculturation. A unidirectional model of acculturation assumes that individuals in the minority

ethnic group lose their cultural identity and acquire cultural identity based on the host culture. The unidirectional model of acculturation assumes acculturation to be synonymous with assimilation for the minority group and does not acknowledge reciprocal influences between groups i.e. that change can occur in more than one group and it is not necessarily the case that the non-dominant group undergoes acculturative change. It is therefore not possible to assume that the category of traditional identity in the Native Hawaiian study bears the same meaning as traditional friendship choices measured in the current study. Moreover, this thesis measured a single domain of acculturative style – friendship choices and the Native Hawaiian study did not include this domain in the cultural identity measure. These acculturation preferences can vary across domains (Keefe and Padilla, 1987) and for the purposes of this thesis it is necessary to appreciate the meaning and context of friendship choices in this particular sample.

Bearing in mind the evidence that acculturation is a reciprocal process (Sam and Berry, 2006) and the fact that the sample of pupils in this study represented an ethnically diverse section of society it is not easy to identify which is the dominant group in this sample. Together with ever present wider socio-cultural influences, a question of 'who is the dominant group in this sample' arises.

7.3.2 Strengths of the Current Study

Even though there are methodological and theoretical differences underlying this thesis and the existing research, these analyses aimed to minimise methodological weaknesses in the field and deconstruct the socio-cultural factors that have been considered to account for ethnic variations in psychological distress and depressive symptoms. Although the study methods employed for this thesis still carry weaknesses and limitations (to be addressed later in this discussion), the intent of this discussion is to interpret the findings from this thesis with reference to the background literature and the context in which this study took place.

In terms of study design and analyses, a prospective study design aimed to track developmental patterns over time and exclude baseline 'cases' from the analyses. The prospective nature of this research was a major strength to the study and reduced the risk of information bias. Information bias is often problematic in retrospective studies, where psychological distress as an outcome measure may be a powerful bias for the recollection of retrospective events or symptoms. Further strategies to address potential sources of bias include the adjustment or stratification of covariate variables in analyses.

Although there is evidence to suggest significant prospective associations between low levels of family social support and depressive symptoms (Lewinsohn *et al.*, 1993), the literature reviewed in Chapter 2 did not take baseline status of psychological distress into account. This study also controlled for additional covariate variables such as socioeconomic status, which has not only been associated with psychiatric morbidity, but has also been associated with weaker levels of social support (Turner and Lloyd, 1999). An additional feature of this study is the fact that both social support and friendship choices were prospectively investigated in an ethnically diverse adolescent sample.

7.4 Ethnic Variations in Psychological Distress and Depressive Symptoms at Follow-up.

The assumption that particular minority groups receive greater levels of social support has been reflected in several studies reviewed in Chapter 2 of the thesis. However, crude classification of ethnic groups in the literature makes an unclear statement as to *which* minority groups' display fewer symptoms of psychological distress compared with the indigenous population. Before investigating levels of social support across the ethnic groups, analyses from Chapter 4 illustrated that there are significant ethnic differences in psychological distress and depressive symptoms at 2-year follow-up in this sample of adolescents. As Chapter 6 contained a smaller sample size compared with analyses in Chapter 4, I first draw upon findings from Chapter 4 regarding ethnic variations in psychological distress and depressive symptoms.

7.4.1 Comparison of the Findings with the Existing Literature

Studies reviewed in the Literature Review of the thesis did not contain information regarding ethnic variations in psychological distress of Black or South Asian groups compared with White UK adolescents. However, lower levels of mental disorder (including emotional, conduct, hyperkinetic and less common mental disorders) amongst Indian British adolescents have been found elsewhere in the literature (Meltzer et al., 2000; Green et al., 2005). These analyses found lower levels of SDQ caseness, but not MFQ caseness, amongst Indian pupils.

Cross sectional findings from The Great Smoky Mountains Study (Costello *et al.*, 1997) and the RELACHS Study (Stansfeld *et al.*, 2004) did not find evidence to suggest higher levels of depressive symptoms in non-White adolescents. Adolescents in the aforementioned studies were aged 11-13 years of age and the pupils in this investigation were 13-16 years of age at follow-up. Further analyses revealed (data not shown in the results chapters) that the older cohort of pupils in White non-UK, Pakistani, Indian, Black and Other groups were all more likely to report emotional symptoms measured by the MFQ than their younger counterparts. It may therefore be the case that pupils are more likely to report depressive symptoms during their transition to middle adolescence compared with early years of adolescence.

Adjusted models investigating ethnic variations in psychological distress and depressive symptoms accounting for covariate variables were built based on the three largest groups (White UK, Bangladeshi and Black pupils). In adjusted regression models, Bangladeshi male pupils were significantly less likely to report SDQ caseness at follow-up compared with White UK male pupils. This association became significant once eligibility for free school meals (a measure of household income) was entered into the regression model.

There is evidence to suggest there are high levels of social disadvantage amongst Bangladeshis the UK (Nazroo, 1997). Unsurprisingly, a large proportion of Bangladeshi pupils sample in this study were eligible for free

school meals: 76.8% (N=146) of Bangladeshi male pupils were eligible for free school meals, compared with 30.5% (N=39) of White males and 36.0% (N=36) of Black pupils. Although eligibility for free school meals was not a significant predictor of SDQ caseness based on the entire eligible sample (see Table 4.12, Chapter 4), not being eligible for a free school meals was significantly protective for Male pupils (based on 3 ethnic groups) OR = 0.22, 95% CI 0.08,0.59). In these analyses, eligibility for free school meals was not a significant predictor of SDQ caseness for female pupils (OR = 1.62, 95% CI 0.64, 4.10).

Why is not being eligible for free school meals protective for male pupils, but not for female pupils? Perhaps this association is an artefact of the data used in this thesis. After all, Stansfeld *et al.*, (2004) found no association between indices of social disadvantage, including eligibility for free school meals and SDQ caseness at baseline for pupils in the RELACHS study at baseline. Other authors have found strong evidence for the association between SES and health in childhood (West, 1997) and adulthood, yet less evidence for the association between SES and health exists during adolescence (West *et al.*, 1990). It could be that the prospective associations between eligibility for free school meals and psychological distress reflect the emergence of a social gradient in psychological distress later in adolescence compared with the sample at baseline. The apparent social gradient in psychological distress for male pupils, but not female pupils, may suggest that boys in this sample are more susceptible to social disadvantage than girls. Could it be the case that boys experiencing social disadvantage are more susceptible to additional risk factors such as peer pressure or other confounding variables not accounted for in this data set?

An additional interesting finding from this thesis concerns the finding that there were low levels of psychological distress amongst Black pupils compared with White UK pupils that still remained once covariate variables were adjusted for. This finding should be interpreted with the findings from the missing data analyses illustrated in Chapter 4 of this thesis. It was apparent that pupils defined as Black were less likely to have complete data on both the SDQ and MFQ at follow-up. It may therefore be the case that Black pupils who were

missing data for the SDQ or MFQ at follow-up may have been likely to be defined as cases on both the SDQ and MFQ at follow-up if there data on these measures was available. Unfortunately, it is not possible to ascertain the status of caseness for pupils with missing data and therefore one should remain cautious whilst interpreting the finding that Black pupils were less likely to be defined as an SDQ case at follow-up in adjusted models.

7.4.2 Ethnic Differences in the Expression of Psychological Symptoms

A general trend for all other groups to report lower levels of psychological distress, but higher levels of depressive symptoms (with the exception of Black pupils) compared with White UK pupils was apparent. The trend for lower levels of psychological distress, but higher levels of depressive symptoms for all other groups compared with White UK pupils was also apparent when the analyses were split by gender.

The SDQ is designed to detect behavioural, emotional or relationship difficulties in adolescents in the past 6 months. The MFQ, on the other hand, specifically detects symptoms of core depressive symptomatology over the past two weeks. One could speculate that a distinct pattern for lower levels of SDQ caseness and elevated levels of MFQ caseness in all non-White groups may reflect the trend that non-White groups are more likely to express their distress through emotional symptoms as opposed to externalizing symptoms and that the MFQ functions as an overall measure of internalizing symptoms. Ethnic and gender differences in the expression of psychological distress and depressive symptoms are discussed in greater depth in the next section.

7.4.3 Explaining Ethnic and Gender Differences in the Expression of Symptoms

It is an interesting observation that the expression of symptoms differs according to ethnicity. As mentioned above, all ethnic groups compared with the White UK group were more likely to express internalizing symptoms (measured by depressive symptoms or emotional symptoms). Yet these groups were less

likely to report overall levels of psychological distress compared with White UK pupils.

How can this emerging pattern in the data be explained? In support of these findings, Zwirs *et al.*, 2006 report that treatment rates for behavioural disorders are generally lower in non-Western children as compared to Western children. McLaughlin *et al.*, 2007 also suggests that ethnic group differences in the prevalence of adolescent depression and depressive symptoms need to be considered concurrently with gender roles and expectations ascribed to particular ethnic groups. In their review of ethnic differences in internalizing and externalizing symptoms in adolescents, these authors found consistently high levels of depressive symptomatology among Hispanic females and argue that 'conflicting cultural values for females may thus contribute to increased risk of depression among Hispanic females'. These authors suggest that traditional Hispanic cultural norms such as emphasis on the family are particularly present for female Hispanic adolescents and place family needs above their own at their expense of their own well-being.

How applicable are McLaughlin and her colleagues' gender conflict concept in the current study? One could argue that higher levels of depressive symptoms measured by the MFQ for Bangladeshi female pupils compared with their male counterparts may be explained by gender differences in socialization. Various cultural pressures, some may argue, are more apparent for female Bangladeshis than male Bangladeshis. In a report examining young Bangladeshi people's experience of transition to adulthood, Mac an Gall and Haywood (2005) found some Bangladeshi female girls believed males within the Bangladeshi community held very stereotypical views regarding gender roles. As one of the authors' participants says, 'Some say, it's all the racist stereotypes that is the worst. I accept that it can be bad for some people and I've had some of those experiences and it's really bad for our mothers' generation. But you also have to say that Bangladeshi men have to catch up with the modern world.'

Whilst interpreting the gender differences in depressive symptoms for Bangladeshi pupils, one needs to distinguish between cultural conflict and stressful experiences stemming from gender constraints for Bangladeshi females. Firstly, the measure of friendship choices in this study does not give an indication of the levels of cultural conflict experiences by pupils. However, gender differences in depressive symptoms within Bangladeshi pupils certainly warrants further investigation into experiences of cultural conflict and gender stereotypes in this community; whether stressful experiences associated with cultural conflict or gender stereotypes lead to the onset of depressive symptoms; whether the perception of gender inequality is symptomatic of cultural conflict.

If it is the case that cultural conflict plays a role in the development of mental health outcomes it is not easy to tell whether female Bangladeshi pupils in this study experience cultural conflict given the finding that culturally similar friendship choices were generally protective for psychological distress amongst females in the three main ethnic groups. The issue of protective effects of culturally similar friendship choices will be discussed in greater depth in the next section of this chapter.

7.5 Distribution of Friendship Choices across Three Main Ethnic Groups and the Association between Friendship Choices and Psychological Distress

When I explored patterns of friendship choices and psychological distress in this sample of adolescents, it appeared as though male and female pupils display a differential relationship between friendship choices and psychological distress. In summary, there were statistically significant differences in friendship choices amongst the three main ethnic groups, where Bangladeshi pupils reported mainly traditional friendship choices and Black pupils reported mainly integrated friendship choices.

7.5.1 Distribution of Friendship Choices across Three Main Ethnic Groups

There were statistically significant differences in the distribution of friendship choices across three main ethnic groups. Bangladeshi male pupils reported the greatest number of traditional friendship choices. This may not be entirely surprising given the fact that Bangladeshi pupils represented the largest ethnic group in this study. It may therefore be the case that a large proportion of traditional friendship choices amongst Bangladeshi pupils reflect the fact that East London is densely populated by Bangladeshi individuals. Pupils defined as Black or White UK reported mainly integrated friendship choices. Redfield *et al.*, 1936 defined acculturation as 'those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original culture patterns of either or both groups'. Such a definition of acculturation assumes the presence of a dominant host group and a single minority group. Use of Berry's framework of acculturation in this study enabled pupils to identify with their own cultural group and other ethnic groups.

7.5.2 Limitations of Berry's Acculturation Model

Limitations of the Berry's bidimensional model have been outlined in the literature (Landrine and Klonoff, 2004), yet Berry's model attempted to overcome many shortcomings associated with unidimensional measures of acculturative style. Before embarking on any further discussion of the risk or protective effects of friendship choices during adolescence, it must be acknowledged that the cultural identity measure in this thesis does not necessarily capture the spectrum of friendship choices that are apparent amongst RELACHS pupils. Use of friendship choices may however prove a novel way of teasing apart the association between ethnicity, social support and friendship choices. There are limitations of Berry's model of acculturation which must be acknowledged. Perhaps, use of Berry's model may not be entirely suited to measure friendship choices in a culturally plural community. For example, use of Berry's model does not provide information on the ethnic background of the 'other' group(s). In a sample consisting of many different ethnic groups, it could be argued that Berry's model of acculturation is more

suited to measuring acculturative style in a sample where there is a single minority ethnic group amongst a majority group. In the East end of London, a world that has become culturally global, it is difficult to ascertain who the 'other' group in the cultural identity measure is. An additional issue of concern concerns the pupils experiencing marginalised friendship choices. Marginalised individuals may not display a particularly strong affiliation to either their own cultural group or culturally dissimilar groups. But, what does it mean to have marginalised friendship choices and what impact does this have upon pupils' mental health outcomes? Compared with integrated individuals, marginalised pupils in this study did not report higher levels psychological distress. Nonetheless, marginalised pupils in this study may run the risk of being socially excluded from their peers. It may not necessarily be the case that marginalised individuals actively choose to adopt this style of functioning. Even though the term acculturation strategy implies that the individual has a choice as to which style of functioning they adopt, it may be the case that friendship choices in this sample are affected by the nature of peers in an individual's environment i.e. friendship choices may be affected by the reciprocal nature of a relationship and marginalised friendship choices may not be an outcome through choice.

Conceptualisation of acculturative style into categories may also act as a limitation to the measurement of acculturative style and our understanding of acculturative style as a dynamic construct. Berry's model considers outcomes of acculturative style to be concrete e.g. one either possesses culturally similar friendship choices, or you do not. The boundaries between styles of acculturation do not in any way merge. In a society that reflects ethnic diversity at its peak, it may be the case that conceptualising acculturative styles in a similar fashion to a Venn diagram, may account for the fluidity between styles of acculturation. Although this thesis has already taken into consideration the fact that friendship choices can change over time, it may be the case that friendship choices remain fluid at a particular point in time. For example, do integrated individuals have conflicting values between individuals from their own and individuals from other cultural groups? In other words, how far can individuals with integrated friendship choices sometimes feel as though they hold a marginalised role in their wider socio-cultural setting? Notions of a fluid

construct of acculturative style at a particular point in time are best understood in terms of a Venn diagram. Berry's classification of acculturative style represent distinct outcomes, yet there may be more complex outcomes occurring, which may not necessarily be captured by Berry's model.

With the above limitations of Berry's model in mind, the use of Berry's model as a basis for measuring friendship choices in this thesis should not be disregarded. It is merely necessary to interpret the findings with these limitations in mind. It may be that Berry's four outcomes of acculturative style provide some insight into a complex construct and the finding that friendship choices account for lower levels of psychological distress in Bangladeshi male pupils merely hints at the fact that culturally similar friendship choices are protective for this group in this sample.

7.5.3 Friendship Choices Accounting for Lower Levels of Psychological Distress in Bangladeshi Male Pupils

For cross sectional analyses, Bhui *et al.*, 2005 found that integrated friendship choices for Bangladeshi pupils were protective for mental health outcomes. Bangladeshi pupils in these analyses did not illustrate this effect at follow-up. A lower risk of being defined as an SDQ Case at follow-up for Bangladeshi pupils reporting traditional friendship choices at either baseline or traditional friendship choices at baseline and follow-up may reflect protective effects of ethnic density or that pupils reporting traditional friendship choices are less likely to be exposed to sources of inter-cultural conflict. Unlike follow-up measures of friendship choices, the context of friendship choices at baseline were not defined, yet administration of the questionnaire in a school based setting may suggest that pupils reported their friendship choices for their friends at school.

Some authors suggest that an element of identity is derived from the social roles we occupy (Stryker, 1980). Social interaction based on the roles we occupy is responsible for the maintenance of well-being (Thoits, 1985). The distribution of friendship choices by tertiles of friend support did not significantly differ for Bangladeshi pupils. However, over half of Bangladeshi pupils defined

as having marginalised friendship choices also reported experiencing low levels of friend support and it may be the case that there were too few Bangladeshi pupils defined as marginalised (for friendship choices) to draw robust conclusions.

7.5.4 Gender Differences in the Association between Friendship Choices and Psychological Distress

The main aim of the analyses presented in Chapter 5 was to explore whether choice of culturally similar or dissimilar peers can account for lower levels of psychological distress in Black and Bangladeshi Male pupils. Although gender differences in the association between friendship choices and psychological distress was not an aim of the thesis, analyses presented in Chapter 5 revealed that there were significant gender differences in the association between friendship choices and psychological distress and this is a noteworthy finding. Although the distribution of friendship choices was not significantly different for male and female pupils between each ethnic group, traditional friendship choices were generally less risky for psychological distress at follow-up, particularly for female pupils. Assimilated friendship choices were significantly associated with psychological distress at follow-up for male pupils and this association was maintained when ethnicity was entered into the model.

Why is assimilated friendship choices associated with significantly higher levels of psychological distress for male pupils and not for female pupils? One should remain cautious whilst interpreting this finding. It may be possible that the large confidence interval for the finding that assimilated friendship choices for male pupils is associated with SDQ caseness (OR = 3.59, 95% CI 1.23,10.59 in the adjusted model) is a 'false positive' finding or indicative of a type 1 error in this thesis. To test whether the association between friendship choices and psychological distress is not a type 1 error, it would be worth replicating this analysis using a larger sample. The finding in this thesis that assimilated friendship choices for male pupils is significantly associated with SDQ caseness was based on 41 pupils only and it is not possible to be clear about the

relationship between assimilated friendship choices and psychological distress amongst male pupils based on the findings in this thesis.

However, it is worth speculating about the potential explanations for this finding in the event that this finding is not merely an artefact of the data. One explanation could be that Bangladeshi male pupils are less adept at handling culturally dissimilar friendship choices. If this was the case, one may possibly expect Bangladeshi pupils reporting assimilated friendship choices to also report lower levels of friend support. Given the finding that there were not notable differences between levels of friend support and levels of friendship acculturative style, it may be necessary to explore additional explanations for the finding that assimilated friendship choices are risky for psychological distress for male pupils.

Could it be a possibility that male adolescents face the stresses of peer pressure when they are forming culturally dissimilar friendship choices? Is this pressure a greater presence for Bangladeshi males given the finding that assimilated Bangladeshi pupils reported a raised risk of psychological distress compared with White UK and Black pupils? Tariq Modood (2004) made the assertion that 'assimilation into an undifferentiated national identity is unrealistic and oppressive'. Yet to what extent does Modood's assertion operate in an environment where Bangladeshi adolescents are not a minority? It is tempting to speculate that those Bangladeshi male pupils that encompass culturally dissimilar friendship choices are at a greater risk for psychological distress purely on the basis that they are functioning as a minority group. Indeed, the number of assimilated Bangladeshi pupils in this sample was small and relatively smaller than the other friendship choices reported amongst Bangladeshi pupils. The potential pressures faced by assimilated Bangladeshi pupils could also involve both the culturally dissimilar peers that they are forming friendships with, and additionally, the Bangladeshi pupils whose friendship networks they are not included in (either by choice, or not).

The convergence of multiple ethnic groups along with the likelihood that acculturation and social support may not merely be categorical outcomes,

poses the question, what can be inferred from these findings? It is paramount that the findings in this thesis are interpreted with both the strengths and limitations used to measure constructs. For example, the possibility that assimilated pupils face peer pressures in their environment may have been better measured by a construct of support that measures the negative aspects of social support. Moreover, it is essential to question theoretical assumptions underlying measures. For example, outcomes for friendship choices in this sample were categorical, not allowing for the prospect that acculturative styles may indeed overlap with one another; where, for example, assimilated pupils may also experience marginalisation amongst some peer groups. It is, however, beyond the scope of this thesis to construct a new measure of acculturation, yet the results produced from this sample of adolescents need to be appreciated within the context of the sample and limitations of the measures used.

7.6 Ethnic Variations in Levels of Social Support at Baseline

Bangladeshi pupils reported significantly lower levels of support from the family and special person subscale of the MSPSS. Both Bangladeshi and Pakistani pupils reported low levels of special person at baseline. Unfortunately, information regarding the membership of the 'special person' as a family member, friend or girlfriend or boyfriend was not available at baseline or follow-up. A 'special person' may have been interpreted as a boyfriend or girlfriend in this sample. In this case, lower levels of special person support in Bangladeshi and Pakistani pupils may reflect the possibility that Bangladeshi or Pakistani pupils are less likely to have partners at this age due to various religious or cultural practices. Alternatively, a 'special person' may not necessarily refer to a partner, future work in Wave III of the RELACHS Study explored whether a family member, friend or partner or other person represented a 'special person'. Unfortunately, there was not adequate information at Wave III to know who the 'special person' is for the sample used in the PhD analyses.

Although Bangladeshi pupils reported low levels of special person support at baseline, Bangladeshi pupils reporting an increase in special person support

overtime were more likely to be defined as an SDQ Case at follow-up. The MSPSS does not measure negative aspects of close relationships and it may be the case that the interaction between special person support and ethnicity predicting SDQ caseness may reflect negative effects of stifling aspects of close relationships for Bangladeshi pupils. In univariate regression models, an increase in special person support was associated with an increased risk for psychological distress for male pupils only.

Another interesting finding concerning the interaction between social support and ethnicity predicting depressive symptoms, where medium levels of friend social support at baseline are significantly associated with MFQ caseness at follow-up (OR=3.33, 95% CI 1.02,10.88). An interaction term between friend social support at baseline and ethnicity was accounted for in adjusted regression models in Chapter 4 of this thesis. Interestingly, addition of the interaction term between social support and ethnicity did not affect the adjusted model. Furthermore, the addition of the interaction term between social support and ethnicity did not affect the association between ethnicity and MFQ caseness at follow-up. It may be the case that the apparent interaction between friend social support at baseline and ethnicity predicting depressive symptoms is a chance finding in this study. A wide confidence interval for this interaction may suggest that this is a chance finding.

7.7 Prospective Associations between Social Support and Mental Health Outcomes

7.7.1 Comparing these Findings to the Existing Research

Although levels of social support significantly differed by ethnicity, social support could not account for lower levels of psychological distress in Black or Bangladeshi male pupils. Findings from the Native Hawaiian Study revealed evidence to support buffering effects of family support in Native Hawaiian adolescents (Goebert *et al.*, 2000). These authors suggested that family support is an integral part of Native Hawaiian culture and the absence of this support has an adverse effect on Hawaiian adolescents, but not non-Hawaiian adolescents. It is problematic to compare the research from this thesis to

findings from the Native Hawaiian study for several reasons. Sample differences between these studies are the most notable differences, yet one less obvious difference is that Goebert and colleagues tested the buffering effects of family support on Native Hawaiians and non Hawaiians. Buffering effects of social support can simultaneously be accompanied by a direct effect of social support (Thoits, 1985) and therefore it is not possible to assume that low levels of social support did not have a direct effect on depressive symptoms in non-Hawaiian adolescents.

7.7.2 Prospective Associations between Low Family Social Support and Depressive Symptoms at Follow-up

In accordance with the literature, prospective associations between low levels of family social support and an increased risk of depressive symptoms for female pupils was apparent (Windle, 1992; Rubin *et al.*, 1992). Furthermore, a decrease in family support had an adverse effect on depressive symptoms for female pupils, but not male pupils. A prospective study design minimised the possibility that those pupils experiencing depressive symptoms at baseline are less likely to seek social support. Therefore low family social support and a decrease in family support overtime are risk factors for depressive symptoms at follow-up for female pupils in this sample.

Sheeber *et al.*, (1997) found evidence to suggest that the association between family support and depressive symptoms was similar for both females and males. These authors assessed family support using a multi-source construct and therefore it may be the case that an inverse association between low levels of family support and depressive symptoms at follow-up for female pupils using self-report measures of support may reflect a discrepancy between support perceived and actual support received (Mermelstein *et al.*, 1986). This findings warrants further investigation and it may be the case that female pupils reporting higher levels of depressive symptoms at follow-up are more likely to experience a greater discrepancy in their perception of perceived family support and the actual support that they receive.

Some authors suggest however that support from the family may act as a better predictor of mental health outcomes compared with friends or special person support (Garnefski and Diekstra, 1996). Low levels of family support did not significantly predict depressive symptoms in adjusted analyses for male pupils once the special person subscale and friend subscale were entered into the model, suggesting a degree of overlap between the three sources of support from the MSPSS Scale.

7.7.3 Decreasing Levels of Family Social Support Overtime as a Predictor of Depressive Symptoms at Follow-up

Results presented from Chapter 4 highlighted that low levels of family support are independently associated with a higher risk of self-reported depressive symptoms at follow-up for female pupils. Analyses undertaken in Chapter 6 built further on this notion, by hypothesising that a relative decrease in family support over time would be associated with depressive symptoms at follow-up.

Analyses in this thesis found that a decrease in social support overtime displayed an adverse effect on follow-up psychological distress and depressive symptoms for female pupils, but not for male pupils. When gender was entered into univariate logistic regression analyses to predict psychological distress or depressive symptoms, male pupils displayed a lower association with MFQ caseness at follow-up compared with female pupils (OR = 0.51, 95% CI 0.37,0.69).

To date, few studies have examined the effects of changes in social support overtime on depressive symptoms during adolescence. However, Cornwell (2003) found evidence suggesting that adolescents who experience decay of parental or friendship support experience higher levels of depression compared with adolescents who experience static or increasing amounts of support overtime. Analyses from this thesis revealed that a decrease in friend support was not an independent predictor of depressive symptoms at follow-up. Although a decrease in friend support was a significant predictor of MFQ caseness in univariate analyses, this association was not significant once

special person support and family support was entered into the regression model. Once again, suggesting that the subscales of the MSPSS may not necessarily act as mutually exclusive sources of support in this sample.

As mentioned above, this thesis confirms the findings in the literature that low levels of family support have a direct influence in depressive symptoms during adolescence. Further confirmation for an increase in friends support and a decrease in family support is also confirmed in this sample (Levitt *et al.*, 1993). Some authors suggest that the association between low levels of family support and depressive symptoms can be explained by the notion that family members provide a more consistent source of support than peer support (Stice *et al.*, 2004). However, given the finding that perception of emotional support provided from the family generally decreased overtime and support from friends increased overtime, it may not necessarily be the case that family support is a more consistent source of support in this sample, yet it may be the case that members of the family provide support that is qualitatively dissimilar to support provided from peers. The MSPSS functions as a measure of perceived emotional support and therefore it would be worthwhile investigating whether family members and peers provide different types of support and whether this support changes over time. It may be the case that adolescent peer groups provide a type of social support that the MSPSS does not tap into. Data from this study cannot inform our knowledge regarding the role of peer groups providing non-emotional means of support.

The roles of family versus friend social support in this thesis have been considered as independent risk factors for psychological distress and depressive symptoms. This is not to suggest, however, that these sources of social support operate by mutually exclusive mechanisms. There is evidence to suggest that the association between peer support and depression is dependent on the level of parent support (Helsen *et al.*, 2000). Given the plethora of theories linking quality of adult relationships from earlier attachments (Bowlby, 1969), it may be a possibility that pupils in this study experience an interaction between family and peer support. This is an area worth exploring in future work.

7.8 Limitations to the Findings

Findings from this thesis are limited by several methodological and conceptual issues. Methodological issues in this study are largely associated with limitations with the measures used and the presence of unmeasured confounding variables that were not taken into consideration in regression analyses. On the other hand, conceptual limitations to the findings question the assumptions underlying constructs measured in the sample. For example, conceptualisation of social support as a direct risk factor associated with mental health outcomes did not take into consideration potential buffering effects of support in this sample. This section addresses the limitations to the findings.

7.9 Conceptual Limitations to the Findings

7.9.1 Direct Versus Buffering Effects of Social Support Upon Mental Health Outcomes

As mentioned above, female pupils in this study displayed a significant association between low levels of family support at baseline and depressive symptoms at follow-up and a decrease in family support and depressive symptoms at follow-up. Yet, no association was found to suggest that either high levels of support or an increase in support over time was a significant protective factor for well-being at follow-up (analyses not shown in results chapters). Cornwell (2003) suggests that the risk effects of support decay on depressive symptoms are stronger than the effect of support growth. However, the nature of these analyses do not take into consideration potential buffering effects of social support on mental health outcomes at follow-up. The buffering theory of support puts forward that support moderates effects of adverse life events. There is evidence to suggest that social support buffers the effects of stressful life events, including acculturative stress (Lee *et al.*, 2004) Analyses in this thesis did not take into account whether social support moderates the association between adversity and mental health outcomes. An area for further investigation would include buffering effects of social support in this sample. A buffering hypothesis would predict that the effects of adverse life events such as deprivation or loss of a parent would be moderated by social support. In a

similar vein, it would be worth exploring whether those pupils reporting high levels of social support experience an increase in support following adversity i.e. is a high received level of social support more likely as a repercussion of adversity.

7.9.2 The Use of Ethnicity as a Variable in Research

Methodological problems associated with the measurement of ethnicity have been outlined in Chapter 2 of the Thesis. An additional issue concerning the use of ethnicity arises from the fact that some researchers fail see beyond the boundaries of ethnicity whilst attempting to interpret the research findings. Numerous researchers have criticised the use of ethnicity as a marker for measuring cultural differences (Kaufman and Cooper, 2001). This thesis has investigated whether social support or friendship choices can provide a deeper insight into ethnic variations in mental health outcomes. One could speculate that the finding in this study that Bangladeshi pupils reported relatively low levels of social support, yet friendship choices can account for lower levels of psychological distress amongst Bangladeshi male pupils compared with their White UK counterparts indicates that there are major limitations to the use of ethnicity as a variable in research.

With regards to migrant populations, theories have been put forward to explain ethnic variations in mental health. For example, the 'migration morbidity hypothesis' puts forwards that migrants have higher levels of disorder compared with indigenous population. On the other hand, theories of 'selective migration' propose that migration occurs selectively where only the 'fittest' population migrate. These two schools of thought may reflect the underlying issue that there are serious limitations involved in the use of ethnicity as a variable in research. Although it may be over zealous to dismiss the use of ethnicity entirely, it is therefore necessary to interpret research findings in accordance with a contextual appreciation of the sample under investigation.

As discussed previously, this study sample comprised mainly of pupils defined as Bangladeshi and perhaps the finding in the current study that friendship choices can account for psychological distress amongst Bangladeshi male pupils may not be replicated in an area where Bangladeshi pupils are in the minority.

One drawback of this study concerns the use of an aggregated 'Black' group comprising of Black British, Black African, Black Caribbean pupils. The use of an aggregated 'Black' group was one way to overcome small numbers for each of the three ethnic groups within the aggregated 'Black' group. Analyses in this thesis revealed lower levels of caseness amongst the aggregated 'Black' group on the mental health outcomes in this study. This finding should be interpreted with caution as the aggregated 'Black' group represents a heterogeneous ethnic group having various religions, languages spoken, foods, music etc... Furthermore, it was apparent that pupils defined as Black were less likely to have complete data on both the SDQ and MFQ at follow-up. Thus, it is difficult to draw robust conclusions from the finding that the aggregated Black group displayed lower levels of psychological distress compared with White UK pupils in adjusted analyses.

7.9.3 Methodological Limitations to the Findings

Potential threats to the validity of the findings from this thesis include the occurrence of type 1 and type 2 errors whilst conducting statistical analyses. A type 1 error, a 'false positive', is the error of rejecting the null hypothesis given that it is actually true. Given the number of statistical tests conducted on this sample, is it possible that any of the statistically significant findings in this thesis are false positives? The potential for a type 1 error has been discussed with reference to two findings from this thesis: firstly, the association between friendship choices and psychological distress amongst male pupils; secondly, the finding that Bangladeshi pupils reporting medium levels of friend social support at baseline were significantly associated with being defined as an MFQ case at follow-up. As mentioned previously, it is necessary to interpret findings

with caution when confidence intervals are wide and/or analyses are based on a small number of individuals. Type II errors, where the error is accepting the null hypothesis when it is in fact false is also a risk in this dataset. The small numbers in some ethnic groups, especially when subdivided by gender, means that the sample has insufficient power to convincingly test some of the hypotheses. This has implications for the interpretation of negative findings.

An additional issue for consideration is the cross-cultural validity of the measures in this thesis. Do the SDQ (Goodman, 2004) and the MFQ (Angold, 1987) capture the same symptoms across each of the ethnic groups defined in this thesis? The SDQ (Goodman, 2004) has been used and validated in a Bangladeshi sample (Mullick and Goodman, 2001) and so the SDQ is an appropriate measure of psychological distress in this sample. To the best of my knowledge, the cross-cultural validity of the MFQ (Angold, 1987) has not been studied. It is interesting therefore that non-White pupils tended to report higher levels of depressive symptoms (measured by the MFQ) compared with White pupils. Is it possible that the MFQ is identifying 'false positives' amongst non-White pupils in this study? It is difficult to ascertain whether different thresholds or cut-offs in the MFQ should be used across the various ethnic groups, this is clearly an area in need of further investigation. It should be noted however that just over 80% of the pupils in these analyses had been born in the UK and of those pupils born outside of the UK, approximately 13% had resided in the UK for less than ten years. One could possibly argue that the validity of the MFQ remains questionable for those pupils born outside the UK, especially for those pupils who had resided in the UK for less than ten years. However, length of stay in the UK was not significantly associated with either SDQ or MFQ caseness based on the sample used in this thesis. A further issue of cross-cultural validity concerns the measure of social support, the MSPSS. There is insufficient evidence on the MSPSS to be certain that it is measuring social support in the same way across different cultural groups. An inability of this measure to identify support from the extended family is a distinct disadvantage of the MSPSS. This potentially may mean there is an underestimation of some important protective aspects of support in some ethnic groups that has not been identified by the MSPSS.

Analyses from this thesis investigated psychological distress and depressive symptoms at 2-year follow-up and the design of the study allowed for baseline cases to be excluded, thus minimising bias in the findings. Hofstra *et al.*, (2002) found that patterns of psychological distress during adolescence can be categorised into one of four categories: persistent, normal, increasing or decreasing distress when measured over 4 waves of data throughout the course of adolescence. Although it is beyond the scope of the current analyses to present such data, a better understanding into the fluctuations and changes in social support and the impact that this trajectory may have upon depressive symptoms during the course of adolescence would benefit from tracking patterns of support during phase III of the RELACHS Study.

In adjusted analyses, baseline covariate variables of age, socio-economic status (eligibility for free school meals, parental employment of vehicle), country of birth, length of time in the UK and where appropriate, ethnicity, were entered into regression models. One could argue that changing levels of covariate variables between baseline and follow-up could affect measures of psychological distress at follow-up. However, covariate variables at baseline such as country of birth, gender and ethnicity were not subject to change between baseline and follow-up.

These analyses did not take into consideration potential confounding effects of religious observance in the association between acculturative style and psychological distress. Research examining the association between religiosity and mental well being is equivocal (Cotton *et al.*, 2006). It may be the case that pupils reporting traditional friendship choices are more likely to attend a place of worship more regularly than pupils reporting other friendship choices and may possibly experience protective effects of spiritual methods of coping.

An additional confounder in these analyses not accounted for included the family structure and the possibility that family support can stem from members

of an extended family network. Sonuga-Barke and Mistry (2000) provide evidence to suggest that extended family networks can influence the well-being of young Asian people in the UK. It would have been useful to know which specific members of the family the pupils in the study live with.

7.10 Conclusion

This thesis has attempted to explore the assumption that certain ethnic minority groups receive higher levels of family social support than the indigenous White UK population and that this might protect against the risk of developing psychological distress. Low levels of baseline social support were prospectively associated with depressive symptoms, especially for female pupils. Interestingly, friendship choices, not social support, could account for lower levels of psychological distress amongst Bangladeshi male pupils. To my knowledge, prospective associations between social support and friendship choices with mental health outcomes have not been explored in the research literature to date.

Measures used in this study may limit the conclusions drawn from our findings. Sonuga-Barke and Mistry (2000) found that the presence of an extended family serve as a protective factor for psychological distress amongst Asian children living in East London yet the family subscale of the MSPSS does not distinguish between support provided by immediate family members and/or extended family members. It is not clear whether specific family members are more likely to provide a supportive function more than other members. Though culturally similar friendship choices serve as a protective factor for well being, it is worth considering domains of identity that were not included in the RELACHS measure of cultural identity. These issues warrant further exploration.

This thesis has attempted to pin point how far social support and friendship choices are associated with mental health outcomes as follow-up. Ethnic variations in mental health outcomes need to be considered in association with

wider social and cultural factors such as religious practices and ethnic density to name a few measures.

Low levels of social support, especially family support, should be addressed as potential risk factors when evaluating psychological distress amongst adolescents. Increasing both parental and adolescent awareness on this issue is vital. Since it is a difficult task to identify particular individuals at risk of receiving low levels of family support, it may be a possibility to equip adolescents with knowledge regarding positive coping strategies and help seeking mechanisms throughout the transition from childhood to adulthood.

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APPENDIX 1

Study

Simmons Longitudinal Study

Publication

Psychosocial risks for major depression in late adolescence: A longitudinal community study (Reinherz *et al.*, 1993).

Main Findings

- 36 of 385 adolescents met DSM-III-R lifetime criteria for major depression at age 18 years
- Females were three times as likely as males to meet lifetime criteria for major depression by age 18, earlier onset than males
- Factors that were significant predictors for major depression at 18 years for males were:

Poorer perception of family role (age 9 years)
Family arguments and violence (ages 10-15 years)

- Factors that were significant predictors for major depression at 18 years for females were:

Larger family size (4+ children)
Poorer perception of family role (age 9 years)
Unpopularity (self-rated at age 9 years)
Overall self-concept (self-rated at age 9 years)

Publication

Adolescent Protective Factors Promoting Resilience in Young Adults at Risk for Depression (Carbonell *et al.*, 2002).

Main Findings

Separate analyses for 'depressed' group and 'resilient' group. Significant differences in factors between the depressed and resilient group were:

- Resilient adolescents reported greater family cohesion at age 15 than depressed group, but this difference was not found at age 18
- At age 15, the mothers of the resilient respondents reported that their adolescents spent significantly more time with their families than the mothers of depressed respondents
- No difference in perceptions of availability of social support
- Resilient respondents were more likely to report sharing personal information with members of their family only, and not with people outside of the family
- Resilient group were more satisfied with the amount of advice, positive feedback, and confidants available to them at 15 and 18
- At age 15 and 18 there was a significant difference in the two groups on self-reported interpersonal relations (popularity, interpersonal problems, and spending time with others).
- Close family relations promoted positive well being for those at risk for developing subsequent problems
- Resilient respondents relied more exclusively on family members as confidants during mid-adolescents than their depressed counterparts

Publication

Risk Factors For Depressive Symptoms in Late Adolescence: A Longitudinal Community Study (Frost *et al.*, 1999).

AIM: To identify early risk factors (emotional or behavioural problems, poor self-concept, poor family relations, need for additional social support, health problems and negative life events) associated with depressive symptomatology at age 18

Main Findings

- Gender-linked trajectories for depressive symptomatology at age 18
- Poor social support for females at age 15 was only linked to depressive symptomatology for girls (unadjusted analyses)
- For males, poor social support at 15 associated with depressive symptomatology at 18 (unadjusted analyses)

Publication

The Relationship of Early Risk and Current Mediators to Depressive Symptomatology in Adolescence (Reinherz *et al.*, 1989)

AIMS: The study hypothesised the following risk factors and mediating factors to depressive symptoms score at age 15.

Main Findings

- Risk factors associated with higher depressive symptoms:

Female gender

Serious illness (ages 0-5)

Anxiety at age 9

Death of parent (only for girls)

- Mediators associated with higher depressive symptoms:

Family cohesion

Social support from both family and peers (satisfaction with assistance, satisfaction with amount of confidant contact, need for confidants, and need for advice)

Self-perception

Study

The Dunedin Multidisciplinary Health and Development Study

Publication

Perceived Attachments to Parents and Peers and Psychological Well-being in Adolescence (Nada Raja *et al.*, 1992)

AIMS: To examine whether an inverse relationship exists between the level of attachment towards parents and peers; to examine sex differences in reports of adolescents' attachment to their parents and peers; to examine that well-being in adolescents is more strongly associated with parent rather than peer attachment and to determine the relative importance of these sources of attachment for mental health.

Main Findings:

- The majority of adolescents reported high attachment to parents and peers. Parents and peers attachment were not inversely related
- Significant sex differences on peer attachment were apparent. Females reported greater attachment to peers than males
- Low perceived attachment to parents was associated with greater conduct, inattention, depression, and frequent experience of negative life events

Publication

DSM-III Disorders from Age 11 to Age 15 Years (McGee *et al.*, 1992).

AIMS: To examine changes in the prevalence of disorder over time, particularly sex differences in disorder. To examine the relationship between family background, academic and social competence and early behaviour problems with disorder.

Main Findings

- At age 11, 66 (8.8%) had DSM-III disorders; at age 15, 147 (19.6%) had DSM-III disorders. The two disorders to show the most marked increases in prevalence were major depressive episode and nonaggressive conduct disorder.
- Over 40% of those with a disorder at age 11 were also identified with disorder at age 15. Over 80% with disorder at 15 did not have a history of disorder at 11.
- At age 11, the ratio of boys to girls with any disorder was 1.3:1. At age 15, this ratio reversed to 0.7:1. Sex differences were also apparent in the continuity of internalising and externalising disorders.

Publication

Models of Adolescent Psychopathology: Childhood Risk and the Transition to Adulthood (Feehan *et al.*, 1995).

AIMS: To determine the extent a history of behaviour problems and emotional disorder in childhood influences the strength of association between disorder at ages 15 and 18 years; to clarify which psychosocial characteristics affect the risk and continuity of disorder; to examine how transition events commonly associated with adolescence affects disorders.

Main Findings

- History of mental health problems, individual and family background characteristics, nor the experience of adolescent transition events influenced the strength of association between disorder at ages 15 and 18
- Strong associations between histories of mental health problems and DSM-III disorder at age 15
- Transition events (leaving school, leaving parental home, living in a relationship as a couple and having a dependent child) did not affect the risk of having a disorder at age 18

Study

The Oregon Adolescent Depression Project

Publication

Adolescent Psychopathology: IV. Specificity of Psychosocial Risk Factors for Depression and Substance Abuse in Older Adolescents (Lewinsohn *et al.*, 1995).

AIMS: To determine specificity of the risk factors for depression and substance use disorder.

Main Findings

- The variables specific to depression reflect six broader constructs: stress, depressotypic cognitions, social support from family, emotional reliance, physical health, and a past history of episodes of depression and anxiety disorder.
- Social support from friends correlated with being depressed, but did not predict onset of MDD
- Variables specific for substance abuse cluster into: academic difficulties, and use of tobacco and other substances.

Study

Australian Temperament Project

Publication

Psychological Disorders and their Correlates in an Australian Community Sample of Preadolescent Children (Prior *et al.*, 1999).

AIMS: To evaluate DSM-III-R disorders in a sample of 11-12 year olds. To identify psychosocial correlates with children that were at risk for DSM-III-R disorders

Main Findings:

- Parents and teachers rated at risk children as having significantly poorer relationships than comparison children
- At risk children also evaluated their own peer and parent relationships more negatively

Study

Oregon Adolescent Depression Project

Publication

Continuity of psychopathology in a community sample of adolescents (Orvaschel *et al.*, 1995).

AIMS: To ascertain the extent to which the early occurrence of a specific disorder increases the probability of the occurrence of other disorders.

Examine selected psychosocial variables (including social support) to examine the association with remission and recurrence of psychopathology

Main Findings

- Family and friends social support was found to be non-significant as a determinant of the second diagnoses representing a recurrence of the primary diagnoses or the onset of a new disorder.

Publication

Psychosocial characteristics of adolescents with a past history of dysthymic disorder: comparison with adolescents with past histories of major depressive and non-affective disorders, and never mentally ill controls (Klein *et al.*, 1997).

AIMS: Authors sought to determine the psychosocial characteristics specific to dysthymic disorder. Furthermore, the authors wanted to know which psychosocial characteristics were also characteristic of major depressive disorder and non-affective psychopathology as well as dysthymic disorder.

Main Findings

- Adolescents with a past history of dysthymic disorder reported significantly lower levels of social support from friends than adolescents with no lifetime history of psychopathology and adolescents with a past history of major depressive disorder.
- Social support from friends appeared to have a high degree of specificity to dysthymic disorder

Publication

Depression-Related Psychosocial Variables: Are They Specific to Depression in Adolescents? (Lewinsohn *et al.*, 1997).

AIMS: Authors examined whether deficits in particular psychosocial variables are specific to depression or characteristic with additional disorders.

Main Findings

- Low social support from friends was more strongly associated with depression than non-affective disorders
- Low social support from family was found to be non-significant to depression
- Neither social support from family nor friends found to be specific to depression

Publication

Psychosocial Risk Factors for Future Adolescent Suicide Attempts (Lewinsohn *et al.*, 1994)

AIMS: Authors examined 26 adolescents who attempted suicide between Time I and Time II assessment points. Psychosocial risk factors from Time I that were associated with suicide attempt were identified.

Main Findings

- Females were more likely to attempt suicide than males (69% females vs. 53% males. Chi sq 1, N = 1508, 2.56, p=0.11)
- After controlling for the effects of current depression level using logistic regression, future suicide attempts were significantly associated with social support from family (OR=2.6)

Publication

Symptoms of DSM-III-R Major Depression in Adolescence: Evidence from an Epidemiological Survey (Roberts *et al.*, 1995).

AIMS: To report the prevalence of symptoms of DSM-III-R major depressive episodes (MDE); the stability of symptoms of MDE; contrast the results for males and females

Main Findings

- At wave I, 2.6% met symptom criteria of MDE to receive a diagnosis
- Low concordance between symptoms at first and second episodes (except depressed mood and anhedonia)

Study

The Great Smoky Mountains Study

Publication

Psychiatric Disorders Among American Indian and White Youth in Appalachia. The Great Smoky Mountains Study (Costello *et al.*, 1997).

AIMS: Describe rates and risk factors for child psychiatric disorders in an American Indian population and a White sample from the same geographical area, to examine the use of mental health services in the two communities, and to discuss possible explanations for the similarities and differences observed.

Main Findings

- At 3-month prevalence, the American Indian children had a slightly lower overall prevalence of psychiatric disorders than the white sample (16.7% vs. 19.2%), accounted for largely by difference in rates of tic disorders in 9-year-old boys.
- In multivariable logistic regression models, family mental illness doubled the risk of child mental illness in both groups. Poverty was associated with a doubling of risk for white youth but not increase the risk for Indians.
- American Indian children had access to mental health care at no cost, yet, they had lower rates of mental health service use age compared to white children
- The only diagnoses more frequent in American Indian children was substance abuse

Study

Christchurch Health and Development Study

Publication

Childhood Peer Relationship Problems and Psychosocial Adjustment in Late Adolescence (Woodward and Fergusson, 1999).

AIMS: To examine the association between peer relationship problems in middle childhood and psychosocial adjustment in late adolescence

Main Findings

- After adjustment, a small trend was apparent between peer relationship problems and externalising disorders in late adolescence. However, this trend was not statistically significant.

Publication

Vulnerability and Resiliency to Suicidal Behaviours in Young People (Fergusson et al., 2003).

AIMS: Explores factors that may contribute to vulnerability or resiliency to suicidal behaviours among young people who developed depressive disorders

Main Findings

- Statistical analyses suggested family history of suicidal behaviour, childhood sexual abuse, personality factors and affiliations with deviant peers modified risk of suicidal behaviour

Publication

Risk Factors and Life Processes Associated with the Onset of Suicidal Behaviour During Adolescence and Early Adulthood (Fergusson *et al.*, 2000).

AIMS: To describe the development of suicidal ideation and suicide attempt over the period of adolescence to early adulthood. To examine the role of social background, family functioning, parental and individual adjustment on the development of suicidal behaviours. To examine the ways in which changing mental health and stressful life events during adolescence and early adulthood are associated with the onset of suicidal behaviours.

Main Findings:

Risk factors independently associated with increased suicidal behaviour were:

- Lower SES
- Adverse family circumstances (parental changes, childhood sexual abuse, parental alcohol problems, lower level of attachment to parents)
- Novelty seeking behaviour
- Neuroticism
- Adverse life events

Study

The National Longitudinal Study of Adolescent Health (AddHealth)

Publication

Epidemiology of Depressive Symptoms in the National Longitudinal Study of Adolescent Health (Rushton *et al.*, 2002).

AIMS: To provide a description of the range of depressive symptoms reported by adolescents in a large nationally representative sample. Authors provided a description of depression scores at baseline and 1 year later. Furthermore, factors associated with the persistence of depression were explored.

Main Findings

- Proportion of depressed (% CES-D > 24) adolescents at baseline:

Non-white*	10.8 ($p < 0.001$)
White	8.5

*African American	15.0%
Hispanic	12.3%
Asian	3.4%
Other	1.4%

- Race was associated with higher CES-D scores at baseline
- Race was not significantly associated with persistent depression
- Relationship with peers was not significantly associated with depressive symptoms

Publication

The Dynamic Properties of Social Support: Decay, Growth, and Staticity, and Their Effects on Adolescent Depression (Cornwell, 2003).

AIMS: To investigate how the direction of change in social support over time differentially affects adolescents' mental and emotional well-being

Main Findings

- A decrease in the reported level of support is significantly associated with depression
- Adolescents who experience a decrease in parental or friendship support experience higher levels of depression on average than those who experience a static or increasing amount of support over time.
- The effect of a decrease in support change on depression is more important than the effect of experiencing relatively high or relatively low amounts of support.

Publication

Depressive Symptoms, Stress, and Support: Gendered Trajectories From Adolescence to Young Adulthood (Meadows *et al.*, 2006).

AIMS: To investigate how stress and support either exacerbate or ameliorate depressive symptoms.

Main Findings

- Depressive symptoms decline from adolescents to young adulthood for both male and female.
- Parental support is negatively related to depressive symptoms for female and male adolescents.
- Stress is related to depressive symptoms for females, but not for males.

Study

The Native Hawaiian Mental Health Research Development Program

Publication

Cultural Identification and Attempted Suicide in Native Hawaiian Adolescents (Yuen *et al.*, 2000).

AIMS: To examine rates of attempted suicide and to measure the effect of Hawaiian cultural affiliation on attempted suicide. Authors proposed that individuals demonstrating traditional cultural practices are protected from suicide attempts.

Main Findings

- Hawaiian adolescents had significantly higher mean levels of suicide attempts, depression, anxiety, conduct disorder/aggression and substance abuse symptoms than non-Hawaiians (unadjusted analyses)
- Contrary to expectation, greater affiliation with Hawaiian culture, poses a significant risk for attempted suicide in Hawaiian adolescents, independent of ethnicity, SES and psychopathology.

Publication

Cumulative Effect of Family Environment on Psychiatric Symptomatology Among Multiethnic Adolescents (Goebert *et al.*, 2000).

AIMS: To investigate levels of family adversity (low SES, family disruption, family criminality and poor family health) and psychiatric symptomatology in Hawaiians and non-Hawaiians. The authors anticipated a positive relationship to be apparent between levels of family adversity and psychiatric symptomatology and that social support would mediate this effect. The authors expected this effect to be more profound amongst Hawaiian adolescents compared with non-Hawaiian adolescents.

Main Findings

- Hawaiians were significantly more adversity than non-Hawaiians
- The proportion of adolescents reporting high levels of psychiatric symptomatology increased significantly with an increase in adversity (Chi sq = 155.31, df = 16, $p < 0.001$)
- Family support reduced the risk for internalising symptoms, especially for Hawaiian adolescents
- The effect of adversity factors had a greater effect on Hawaiian adolescents who receive less family support

Publication

Psychosocial Risk and Protective Influences in Hawaiian Adolescent Psychopathology (Nahulu *et al.*, 1996).

AIMS: The aims of this study were (a) to measure the levels of family and friend support in Hawaiian and non-Hawaiian adolescents, (b) investigate whether support from family and friends is greater for female pupils compared with male pupils in both Hawaiian and non-Hawaiian samples and (c) investigate whether help-seeking behaviour is a protective factor for both Hawaiian and non-Hawaiian adolescents.

Main Findings

- Overall, Hawaiian adolescents reported greater levels of support from family and friends compared with non-Hawaiian adolescents.
- Females in both the Hawaiian and non-Hawaiian sample reported significantly greater friends support compared with males. Although females reported significantly higher levels of family support in the non-Hawaiian group, there was no significant difference between females and males in family support.
- Hawaiian and non-Hawaiian males and females who discussed their problems with others and were satisfied with those discussions reported significantly less depressive and anxiety symptoms than those pupils who did not.

Publication

Depressive Symptoms Among Filipino American Adolescents (Edman *et al.*, 1998)

AIMS: The aims of the study were (a) to determine whether there are ethnic differences in reported depressive symptomatology between Filipino adolescents and a White comparison group, (b) examine whether Filipino adolescents experience higher levels of somatic symptoms compared with the comparison group, (c) examine whether there are gender differences in depressive symptomatology and (d) examine whether there is an association between depressive symptomatology and attempted suicide amongst Filipino adolescents.

Main Findings

- There were no significant differences in reports of depressive symptoms between Filipino adolescents and the White comparison group
- There were no significant differences in the ratings of somatic symptoms between Filipino adolescents and the White comparison group
- Filipino females were found to have higher levels of depressive symptomatology compared with Filipino male adolescents. Gender differences in depressive symptomatology amongst White pupils were not evident.
- There was a significant association between depressive symptomatology and reported attempted suicide amongst Filipino adolescents

Study

Victorian Adolescent Health Study

Publication

Parental 'affectionless control' in adolescent depressive disorder (Pattern *et al.*, 2001).

Aims

To investigate the associations between parenting style and depression in an adolescent sample

Main Findings

- Low maternal and parental care had independent associations with depressive symptoms.
- The associations with high parental control and depressive symptoms were small.

Study

The Determinants of Adolescent Social well-being and Health (DASH) Study

Publication

Psychological well-being in Black Caribbean, Black African, and White adolescents in the UK MRC DASH study (Maynard et al., 2007)

Aims: To assess whether: (a) adolescents from two parent families report better psychological well-being compared with other adolescents (b) family type or social deprivation influence levels of psychological well-being in Black Caribbean, Black African, and White adolescents and (c) there will be distinct differences in psychological well-being between Black Caribbean and Black Africans with poorer mental health scores for Black Caribbean's explained by family type.

Main Findings

- For females, pupils from all family types that did not include both biological parents reported higher levels of psychological distress compared with pupils living with both biological parents. When the analyses were split by ethnicity and gender, Nigerian/Ghanian boys and Other African girls reported less psychological distress than their White peers once family type was adjusted for.
- Although Black Caribbean and Mixed Black Caribbean/White groups reported the highest proportion of reconstructed and lone parent families, minority status was associated with fewer symptoms of psychological distress and family type or social deprivation could not account for ethnic variations in psychological distress.

APPENDIX 4

Friendship choices at baseline questions taken from the Cultural Identity Scale

Do you have many good friends who belong to your race?

- None
- Some
- Quite a lot
- Most or all of them belong to my own race/ethnic group

Do you have many good friends who belong to other races?

- None
- Some
- Quite a lot
- Most or all of them belong to other races/ethnic groups

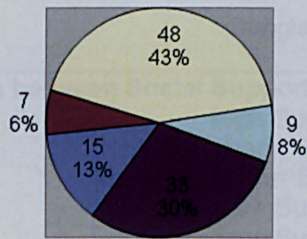
APPENDIX 5

	Disagree Very Strongly	Disagree Strongly	Disagree Mildly	Neutral	Agree Mildly	Agree Strongly	Agree Very Strongly
There is a special person who is around when I am in need	0	0	0	0	0	0	0
There is a special person with whom I can share joys and sorrows	0	0	0	0	0	0	0
My family really tries to help me	0	0	0	0	0	0	0
I get the emotional help and support I need from my family	0	0	0	0	0	0	0
I have a special person who is a real source of comfort to me	0	0	0	0	0	0	0
My friends really try to help me	0	0	0	0	0	0	0
I can count on my friends when things go wrong	0	0	0	0	0	0	0
I can talk about my problems with my family	0	0	0	0	0	0	0
I have friends with whom I can share my joys and sorrows	0	0	0	0	0	0	0
There is a special person in my life who cares about my feelings	0	0	0	0	0	0	0
My family is willing to help me make decisions	0	0	0	0	0	0	0
I can talk about my problems with my friends	0	0	0	0	0	0	0

APPENDIX 6

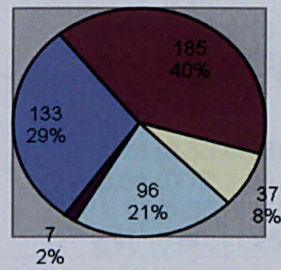
Pie charts displaying composition of Combined 'White Other', 'Black', 'Mixed' and 'Other' groups.

Combined White Other Pupils



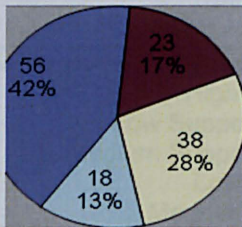
Irish ■ Greek □ Turkish □ Kurdish ■ White Other

Combined Black Group Pupils



BI.Caribbean ■ BI African □ BI.Somali
BI British ■ BI Other

Mixed Pupils



White and Black Caribbean
White and Black African
White and Asian
Mixed Other

APPENDIX 7

Odds Ratios and 95% Confidence Intervals Predicting MFQ caseness from the interaction between baseline MSPSS Scores and ethnicity.

	Odds Ratios and 95% Confidence Intervals to Predict MFQ Caseness at Follow-up
Total Social Support at Baseline	
High (283)	1
Medium (253)	0.56 (0.23,1.36)
Low (280)	1.12 (0.50,2.43)
Ethnicity	
White (248)	1
Bangladeshi (344)	1.04 (0.50,2.19)
Black (229)	0.47 (0.19,1.16)
Interaction between Social Support*Ethn	
High Support*White	1
Low Support*Bangladeshi	1.46 (0.53,4.03)
Medium Support*Bangladeshi	2.38 (0.77,7.39)
Low Support*Black	1.14 (0.30,4.35)
Medium Support*Black	2.99 (0.80,11.25)

	Odds Ratios and 95% Confidence Intervals to Predict MFQ Caseness at Follow-up
Family Social Support at Baseline	
High (284)	1
Medium (275)	0.88 (0.37,2.07)
Low (262)	1.95 (0.87,4.39)
Ethnicity	
White (248)	1
Bangladeshi (344)	0.95 (0.42,2.15)
Black (229)	0.70 (2.80, 1.74)
Interaction between Social Support*Ethn	
High Support*White	1
Low Support*Bangladeshi	1.52 (0.52,4.46)
Medium Support*Bangladeshi	1.88 (0.60,5.91)
Low Support*Black	0.55 (0.14,2.12)
Medium Support*Black	1.51 (0.41,5.55)

	Odds Ratios and 95% Confidence Intervals to Predict MFQ Caseness at Follow-up
Friend Social Support at Baseline	
High (304)	1
Medium (216)	0.43 (0.16,1.16)
Low (301)	0.84 (0.40,1.80)
Ethnicity	
White (248)	1
Bangladeshi (344)	0.92 (4.67,1.83)
Black (229)	0.57 (0.24,1.33)
Interaction between Social Support*Ethn	
High Support*White	1
Low Support*Bangladeshi	1.99 (0.76,5.23)
Medium Support*Bangladeshi	<u>3.33 (1.02,10.88)*</u>
Low Support*Black	1.12 (0.33,3.85)
Medium Support*Black	2.08 (0.50,8.67)

*p<0.05

	Odds Ratios and 95% Confidence Intervals to Predict MFQ Caseness at Follow-up
Special Person Social Support at Baseline	
High (300)	1
Medium (232)	0.72 (0.32,1.80)
Low (289)	0.78 (0.34,1.80)
Ethnicity	
White (248)	1
Bangladeshi (344)	1.03 (0.50,2.13)
Black (229)	<u>0.40 (0.17,0.97)*</u>
Interaction between Social Support*Ethn	
High Support*White	1
Low Support*Bangladeshi	1.56 (0.54,4.49)
Medium Support*Bangladeshi	2.59 (0.89,7.56)
Low Support*Black	2.58 (0.70,9.51)
Medium Support*Black	2.32 (0.62,8.69)

*p<0.05

Odds Ratios and 95% Confidence Intervals Predicting SDQ caseness from the interaction between baseline MSPSS Scores and ethnicity.

	Odds Ratios and 95% Confidence Intervals to Predict SDQ Caseness at Follow-up
Total Social Support at Baseline	
High (283)	1
Medium (258)	0.77 (0.30,1.96)
Low (280)	0.83 (0.33,2.11)
Ethnicity	
White (248)	1
Bangladeshi (344)	0.38 (0.13,1.10)
Black (229)	<u>0.23 (0.06,0.82)*</u>
Interaction between Social Support*Ethn	
High Support*White	1
Low Support*Bangladeshi	2.44 (0.60,9.95)
Medium Support*Bangladeshi	1.90 (0.43,8.36)
Low Support*Black	1.18 (0.15,9.16)
Medium Support*Black	1.57 (0.24,10.30)

*p<0.05

	Odds Ratios and 95% Confidence Intervals to Predict SDQ Caseness at Follow-up
Family Social Support at Baseline	
High (284)	1
Medium (275)	0.83 (0.34,2.01)
Low (262)	0.62 (0.21,1.81)
Ethnicity	
White (248)	1
Bangladeshi (344)	<u>0.30 (0.10,0.93)*</u>
Black (229)	<u>0.16 (0.04,0.74)*</u>
Interaction between Social Support*Ethn	
High Support*White	1
Low Support*Bangladeshi	4.27 (0.90,20.28)
Medium Support*Bangladeshi	2.22 (4.97,9.94)
Low Support*Black	4.03 (0.53,30.77)
Medium Support*Black	1.20 (0.14,10.55)

	Odds Ratios and 95% Confidence Intervals to Predict SDQ Caseness at Follow-up
Friend Social Support at Baseline	
High (304)	1
Medium (216)	1.01 (0.37,2.75)
Low (301)	1.13 (0.46,2.75)
Ethnicity	
White (248)	1
Bangladeshi (344)	0.54 (0.21,1.40)
Black (229)	0.41 (0.27,1.34)
Interaction between Social Support*Ethn	
High Support*White	1
Low Support*Bangladeshi	1.40 (0.39,5.03)
Medium Support*Bangladeshi	1.29 (0.30,5.53)
Low Support*Black	0.22 (0.20,2.34)
Medium Support*Black	0.88 (0.14,5.52)

*p<0.05

	Odds Ratios and 95% Confidence Intervals to Predict SDQ Caseness at Follow-up
Special Person Social Support at Baseline	
High (300)	1
Medium (232)	0.67 (0.27,1.68)
Low (289)	0.55 (0.20,1.50)
Ethnicity	
White (248)	1
Bangladeshi (344)	<u>0.26 (0.08,0.82)*</u>
Black (229)	<u>0.17 (0.05,0.61)**</u>
Interaction between Social Support*Ethn	
High Support*White	1
Low Support*Bangladeshi	3.23 (0.84,16.73)
Medium Support*Bangladeshi	2.76 (0.58,13.12)
Low Support*Black	2.12 (0.27,16.91)
Medium Support*Black	2.49 (0.38,16.14)

*p <0.05, **p<0.01

Appendix 8

Univariate analyses of associations between baseline social support (subscales and total) and mental health outcomes at follow-up stratified by ethnicity.

<u>Family Support</u>	SDQ caseness Phase II		MFQ caseness Phase II
	Unadjusted Social Support Odds Ratio For SDQ Caseness		Unadjusted Social Support Odds Ratio For MFQ Caseness
White UK High (112) Medium (79) Low (57)	1 0.93 (0.39,2.22) 0.65 (0.22,1.88)	White UK High (112) Medium (79) Low (57)	1 0.88 (0.37,2.07) 1.95 (0.87,4.39)
Bangladeshi High (91) Medium (115) Low (138)	1 2.38 (0.67,8.43) 3.17 (0.94,10.65)	Bangladeshi High (91) Medium (115) Low (138)	1 1.65 (0.77,3.53) 2.97 (1.46,6.03)*
Black High (81) Medium (81) Low (67)	1 0.84 (0.11,6.41) 2.16 (0.37,12.28)	Black High (81) Medium (81) Low (67)	1 1.32 (0.50,3.54) 1.08 (0.37,3.16)

<u>Friend Support</u>	SDQ caseness Phase II		MFQ caseness Phase II
	Unadjusted Social Support Odds Ratio For SDQ Caseness		Unadjusted Social Support Odds Ratio For MFQ Caseness
White UK High (98) Low (88) Medium (62)	1 1.15 (0.48,2.78) 0.86 (0.31,2.39)	White UK High (98) Low (88) Medium (62)	1 0.84 (0.40,1.80) 0.43 (0.16,1.16)
Bangladeshi High (125) Low (133) Medium (86)	1 1.54 (0.63,3.79) 1.22 (0.44,3.39)	Bangladeshi High (125) Low (133) Medium (86)	1 1.68 (0.93,3.05) 1.44 (0.74,2.80)
Black High (81) Low (80) Medium (68)	1 0.27 (0.30,2.46) 0.93 (0.19,4.59)	Black High (81) Low (80) Medium (68)	1 0.95 (0.36,2.51) 0.90 (0.32,2.55)

<u>Special Person Support</u>	SDQ caseness Phase II		MFQ caseness Phase II
	Unadjusted Social Support Odds Ratio For SDQ Caseness		Unadjusted Social Support Odds Ratio For MFQ Caseness
White UK High (102) Low (69) Medium (77)	1 0.52 (0.19,1.38) 0.53 (0.21,1.35)	White UK High (102) Low (69) Medium (77)	1 0.78 (0.34,1.80) 0.72 (0.32,1.63)
Bangladeshi High (93) Low (160) Medium (91)	1 3.11 (0.98,9.92) 2.22 (0.61,8.05)	Bangladeshi High (93) Low (160) Medium (91)	1 1.22 (0.64,2.32) 1.85 (0.93,3.69)
Black High (105) Low (60) Medium (64)	1 1.30 (0.20,8.33) 1.76 (0.31,9.88)	Black High (105) Low (60) Medium (64)	1 2.02 (0.74,5.47) 1.66 (0.59,4.67)

<u>Total Support</u>	SDQ caseness Phase II		MFQ caseness Phase II
	Unadjusted Social Support Odds Ratio For SDQ Caseness		Unadjusted Social Support Odds Ratio For MFQ Caseness
White UK High (99) Low (72) Medium (77)	1 0.88 (0.35,2.20) 0.66 (0.25,1.71)	White UK High (99) Low (72) Medium (77)	1 1.11 (0.50,2.43) 0.56 (0.23,1.36)
Bangladeshi High (93) Low (146) Medium (105)	1 2.2 (0.77,6.49) 1.67 (0.52,5.29)	Bangladeshi High (93) Low (146) Medium (105)	1 1.61 (0.85,3.07) 1.33 (0.66,2.66)
Black High (91) Low (62) Medium (76)	1 1.04 (0.17,6.5) 1.04 (0.18,5.83)	Black High (91) Low (62) Medium (76)	1 1.26 (0.43,3.72) 1.70 (0.63,4.44)

Appendix 9

Percentage (N) of psychological distress categorised for 3 mutually exclusive categories of friendship choices at baseline (traditional at baseline, traditional at baseline and follow-up, other friendship identity) split by Ethnicity and Gender

		SDQ CASES % (N)	SDQ NON- CASES % (N)	
White UK	Male	Traditional at Baseline	18.2 (2)	16.2 (17)
		Traditional at Baseline & Follow-up	9.1 (1)	15.2 (16)
		Other Friendship Identity	72.7 (8)	68.6 (72)
	Female	Traditional at Baseline	6.3 (1)	16.7 (17)
		Traditional at Baseline & Follow-up	6.3 (1)	9.8 (10)
		Other Friendship Identity	87.5 (14)	73.5 (75)
Bangladeshi	Male	Traditional at Baseline	0.0 (0)	19.2 (30)
		Traditional at Baseline & Follow-up	27.3 (3)	37.2 (58)
		Other Friendship Identity	72.7 (8)	43.6 (68)
	Female	Traditional at Baseline	0.0 (0)	25.9 (35)
		Traditional at Baseline & Follow-up	16.7 (2)	27.4 (37)
		Other Friendship Identity	83.3 (10)	46.7 (63)
Black	Male	Traditional at Baseline	0.0 (0)	11.7 (11)
		Traditional at Baseline & Follow-up	0.0 (0)	9.6 (9)
		Other Friendship Identity	100.0 (1)	78.7 (74)
	Female	Traditional at Baseline	28.6 (2)	12.8 (14)
		Traditional at Baseline & Follow-up	0.0 (0)	15.6 (17)
		Other Friendship Identity	71.4 (5)	71.6 (78)