Developmental Barriers and the Benefits of Disengagement

Dissertation zur Erlangung des akademischen Grades

doctor philosophiae (Dr. phil.)

vorgelegt dem Rat der Fakultät für Sozial- und Verhaltenswissenschaften der

Friedrich-Schiller-Universität Jena

von

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geboren am 2. Dezember 1977 in Breslau

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Tag des Kolloquiums: 4. März 2008

To those who nevertheless stay committed.

ACKNOWLEDGMENT

It is a strong need of mine to express my deep gratitude to Christiane who took over almost all of my duties and kept the family business going on while I was free to start my scientific journey which finally resulted in this doctoral thesis. This invaluable support was complemented by my advisors Rainer K. Silbereisen who gave me the opportunity to profit from the scientifically inspiring setting at the *Sonderforschungsbereich* in Jena, and Jutta Heckhausen whose scientific work has strongly impressed me. I appreciate their involvement on both the professional and the personal level. I would also like to articulate my acknowledgment to my colleagues and thank for the numerous occasions we had for stimulating discussions and critical disputes. My special gratitude is directed to Ma-Li Kleidon for her conscientious proof-reading of the manuscript and commenting on style and language.

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ABSTRACT

This paper analyzes adaptive behavior of individuals who face developmental barriers, i.e., a situation with seriously limited opportunities for primary control or problem-oriented coping. Specifically, it focuses on coping with demands of social and economic change in the domains of work and family when opportunity structures are limited. The life-span theory of control (J. Heckhausen & Schulz, 1995) suggests that if opportunities for primary control are unfavorable, the most adaptive way of coping is to switch to compensatory secondary control strategies of self-protection and disengagement. These strategies are supposed to prevent individuals from repeated experiences of failure, to protect their motivational and emotional resources, and thus to allow the maintenance of their primary control capacity. It was thus hypothesized that under the condition of a developmental barrier self-protection and disengagement are positively correlated with general and domain-specific measures of satisfaction with life. Furthermore, it was explored whether optimism and involvement in an alternative life domain can promote self-protective strategies and ease disengagement from unattainable demands. These research questions were tested on a subsample of $N = 806$ subjects who participated the study “Psychosocial Resources and Coping with Social Change: Development and Psychosocial Effects” and who reported being particularly confronted with demands of social change. Participants originated from 82 regional units in Western and Eastern Germany for which objective indicators of opportunity structures related to work and family life were collected. Statistical analyses were performed by testing cross-level interactions in mixed-effects models. Results showed positive associations between self-protection or disengagement and measures of satisfaction with life if – and only if – developmental barriers were high. A sense of optimism and the involvement in an alternative life domain seem to promote adaptive control strategies and to amplify their positive associations with satisfaction with life. These findings support the theoretical framework provided by the life-span theory of control and imply that under certain circumstances giving up may be more adaptive than persistence.

Zusammenfassung

In dieser Arbeit wurde das adaptive Verhalten von Individuen untersucht, die vor Entwicklungsschranken stehen, d.h. ernsthaft eingeschränkten Opportunitäten für primäre Kontrolle oder problemorientierte Bewältigung ausgesetzt sind. Genauer gesagt wurde die Bewältigung von Anforderungen des sozialen und ökonomischen Wandels in den Bereichen Arbeit und Familie unter eingeschränkten Opportunitätsstrukturen untersucht. Die Lebensspannentheorie der Kontrolle (J. Heckhausen & Schulz, 1995) behauptet, dass im Falle von ungünstigen Opportunitäten für primäre Kontrolle kompensatorische sekundäre Kontrollstrategien der Selbstprotektion und der Loslösung die adaptivste Form der Bewältigung darstellen. Diese Strategien verhindern die wiederholte Konfrontation mit Misserfolgserlebnissen, schützen das motivationale und emotionale Potenzial des Individuums und erlauben so auf lange Sicht die Aufrechterhaltung des primären Kontrollpotenzials. Daher wurde die Hypothese aufgestellt, dass Selbstprotektion und Loslösung unter der Bedingung einer Entwicklungsschranke positiv mit allgemeiner und bereichsspezifischer Lebenszufriedenheit korreliert sind. Weiterhin wurde explorativ untersucht, ob Optimismus und das Engagement in einem alternativen Lebensbereich selbstprotektive Strategien fördern kann und die Loslösung von Anforderungen vereinfacht, denen das Individuum unter den gegebenen Bedingungen nicht gerecht werden kann. Diese Forschungsfragen wurden an einer Teilstichprobe von $N = 806$ Teilnehmenden der Studie „Psychosoziale Ressourcen und Bewältigung des sozialen Wandels: Entwicklung und psychosoziale Effekte“ untersucht, die eine besonders starke Konfrontation mit Anforderungen des sozialen Wandels berichtet haben. Die Teilnehmenden stammten aus 82 west- und ostdeutschen Landkreisen, für die objektive Indikatoren der beruflichen und familienbezogenen Opportunitätsstrukturen zusammengestellt worden sind. Zur statistischen Überprüfung der Hypothesen wurden Mehrebeneninteraktionen in *mixed effects*-Modellen berechnet. In den Ergebnissen zeigten sich positive Zusammenhänge zwischen Selbstprotektion und Loslösung auf der einen Seite und Maßen der Lebenszufriedenheit auf

der anderen, aber nur dann, wenn die Entwicklungsschranken hoch sind. Dispositioneller Optimismus und das Engagement in einem alternativen Lebensbereich scheinen die adaptiven Kontrollstrategien zu fördern und ihre positiven Zusammenhänge mit der Lebenszufriedenheit zu verstärken. Diese Befunde stützen die theoretischen Postulate der Lebensspannentheorie der Kontrolle und erlauben die Schlussfolgerung, dass unter bestimmten Bedingungen Aufgeben adaptiver sein kann als persistente Hingabe an das Ziel.

DEVELOPMENTAL BARRIERS IN NORMATIVE LIFE TASKS AND TRANSITIONS

The human life-course is subject to continuous change which makes it both intellectually and methodologically a fascinating research domain. Many developmental psychologists argue that in order to describe, explain and understand human development, research needs to consider the social context in which it takes place (Bronfenbrenner, 1992; Connell, 1990; Silbereisen, Eyferrth & Rudinger, 1986). An individual's social ecology provides the opportunities and constraints that allow to realize his or her developmental potential. It also forms the backdrop against which developmental trajectories are followed and that bounds individual agency throughout the life span (Shanahan & Hood, 2000). If one conceives human development as a process of selection and compensation (Baltes, 1987; J. Heckhausen & Schulz, 1995) which condenses into individual goal structures, the selection of goals that correspond to the given structures of opportunity becomes an important aspect of optimization in human development. However, opportunities and constraints are not invariant characteristics of the social ecology but also subject to change both on a historical level (Pinquart & Silbereisen, 2004; Silbereisen et al., 2006) and throughout each individual's life (J. Heckhausen, 1999; J. Heckhausen & Schulz, 1995). In other words, human development can be perceived as individual change set within a changing context. A critical challenge for the individual's self-regulation, therefore, is to adapt self-regulative selection and compensation to the changing opportunity structures. The waxing and waning of opportunities require individuals to adjust their goal structures carefully, to disengage from dwindling action domains and switch more feasible alternatives without loosing a sense of self continuity. These basic considerations are the starting point of this doctoral dissertation.

Current psychological research put its focus on goal striving, goal engagement, and the related emotional and cognitive processes. The purpose of this study is to demonstrate the adaptive value of *disengagement* from unattainable demands in central domains of life. Disengagement usually is associated with psychological costs and certainly does not correspond the cultural preference for an agentic coping with demands of life. However,

when opportunity structures are unfavorable for the mastery of the respective demands, disengagement may protect the individual's motivational and emotional potential and preserve resources otherwise wasted into persistent but unpromising problem solving. I therefore expect that individuals who under unfavorable opportunity structures disengage from unattainable demands will be better off in terms of subjective well-being. Several arguments for this expected relationship will be discussed in this doctoral thesis. Many of them refer to the positive long-term effects of disengagement but one can also expect short-term effects. The avoidance of repeated experiences of failure, for instance, is one important aspect of disengagement that is likely to protect subjective well-being in the short run.

The suggested psychological advantages of disengagement under unfavorable conditions apply to a variety of goals and demands in different domains of life and may be investigated in both a short-term and long-term time perspective. As such, the adaptive mechanism is supposed to be quite universal across these different levels of analysis. In this dissertation thesis, I will investigate this mechanism in a domain which is of particular relevance for both individual development and social policy. The focus of this study is on typical demands resulting from social change. Social change can be defined as comprehensive change in the typical characteristics of a society including its political systems, social institutions, and cultural products (Calhoun, 1992; Endruweit, 1989). This change on the macro-level produces demands for the individual which he or she has to cope with effectively. The attempt to cope with these demands takes place in a more or less favorable context of opportunities, and this variation allows us to test the hypothesis of beneficial effects of disengagement. Note that demands and opportunity structures are conceptually different. Demands are situated at the level of the individual and are linked with individual goals and projects. In this study, demands are defined as the potentially negative manifestations of social change on the individual level. Opportunity structures are a feature of the environment. They reflect resources that are provided by the context and that are relevant for the mastery of demands posed on individuals.

In the first section of this doctoral thesis I will present an overview of contemporary social change and discuss the mechanisms that translate change of society as a whole into individual demands. Particularly, I will focus on the domain of work and family and show how these life domains are influenced by new demands that originate from social change. These considerations are build on the theoretical framework developed by Pinquart and Silbereisen (2004) who realized them in an empirical study (see Silbereisen et al., 2006) from which the data used here is drawn. In the second section, I will introduce the life-span theory of control (J. Heckhausen & Schulz, 1995) which represents an innovative theoretical framework for the understanding of self-regulation in general. The life-span theory can be applied to analyze how individuals cope with changing opportunity structures. It also allows to formulate propositions on the adaptiveness of the various modes of coping. Based on the life-span theory of control, the concept of developmental barriers will be introduced to describe opportunity structures that are very unfavorable for the attainment of certain developmental goals. I will argue that individuals facing a developmental barrier should disengage from unattainable goals in order to protect their motivational and emotional potential and to preserve resources otherwise wasted. In the third section, this proposition will be tested empirically in a sample of individuals highly affected by social change. Multilevel models will be applied to investigate cross-level interactions between indicators of opportunity structures and self-regulatory strategies. In subsequent analyses, some conditions will be explored that are positively correlated with adaptive self-regulation. In the fourth section finally, I will discuss the findings and its implications for theory and application and suggest directions for further research into self-regulation under conditions of social change.

How Social Change Changes Our Lives

There have been numerous attempts to describe the actual state of contemporary Western societies and to predict at least the thread of their future development. Sociological analysis has proposed various catchy terms to conceive the major trends and issues that define the nature of these societies today. Among them we find labels such as 'experience

society' (Schulze, 2005), 'civil society', (e.g., Pestoff, 2003), 'knowledge and information society' (for review, see Steinbicker, 2001), 'multi-option society' (Gross, 1994), 'media society' (McLuhan & Powers, 1989), 'post-capitalist society' (Drucker, 1993), 'post-liberal society' (Gray, 1993), or 'multicultural society' (for review, see Mintzel, 1997) to name only a few of those that have received attention in the scientific community. This multitude itself characterizes the reflexive nature of the present *Zeitgeist*. For over thirty years now sociologists have been talking of a 'post-industrial society' (see Bell, 1974) and point to the dramatic change in the political economical relevance of economic sectors such as agriculture, manufacturing, and the services. Post-industrialism was predicted to have a major impact on the qualification demands of the workforce, in turn affecting various aspects in the lives of individuals and changing their entire biographies in an unprecedented way. A similar perspective, though emphasizing the organizational structures of economic entities, was taken by theorists who saw the coming of a 'post-Fordist' era in which hierarchies and the extreme division of labor were neither necessary nor longer accepted (Kern & Schumann, 1987; Mathews, 1989).

The idea of a structural dissolution and an increased heterogeneity can be found particularly well elucidated by the concept of 'post-modernism'. Originally an architectural current, post-modern thinking was taken up by sociology and has influenced theories of society in a substantial way. However, given the impact of these ideas, it is more appropriate to conceive post-modernism as a broad cultural concept rather than a single sociological theory. Whereas modern societies are thought to be tuned towards the future and thus stand in sharp contrast to traditional societies that conceive the future mainly as a replication of the past, post-modern societies are thought to have lost all orientation towards time direction (Therborn, 1995). This can be seen in the collapse of traditional social institutions such as classes, gender roles, or the family, in an increased heterogeneity of the life-courses, and in a pluralization of life designs (see also Berger, 1996). Individuals emancipate themselves from traditional roles in most domains of life including the occupational career, interpersonal and

sexual relationships, family building, child rearing, and leisure activities (Beck, 1986; Berger, 1996). Radical post-modernism thus implies the loss of content in favor of an emphasis of the process itself, which is a process of constant change. This process is called 'modernization' and is subject to a varied and sometimes heated sociological debate.

The original modernization paradigm proposes a constant increase of rationality in individual and institutional decisions and actions. It is highly questionable whether this proposition is any longer tenable. One of the most prominent concepts with regard to this issue has been introduced by Beck (1986), who describes the contemporary society in terms of a 'risk society'. For many reasons, among which technological advancement plays a prominent role, the individual is confronted with a growing number of risks such as environmental damage or rising criminality rates. This does not mean that the past was free of any danger. However, dangers in the past are completely different from the risks today. Whereas the former are unpredictable, the latter can be calculated and are thus subject to rational choice. A key to the understanding of the risk society lies in the decreasing significance of traditional social institutions that are no longer able to provide structure and support for the members of a society with respect to their decisions. Therefore, the individual is forced to emancipate from these institutions and define individual structures. This emancipation from traditional class and role assignments is referred to as individualization which further weakens the institutionalization of the life-course (Dannefer, 1989; Held, 1986; Neugarten, 1979; Rindfuss, Swicegood & Rosenfeld, 1987). Beck and cognate theorists regard individualization as the main cause for the upcoming of the 'reflexive modernity' (Beck, Giddens & Lash, 1999). When the decisions and actions of individuals are no longer prescribed by traditional institutions, risks become individualized and produce precariousness (see Beck et al., 1999; Giddens, 1990). This forces all members of a society to negotiate their individual pathways in a reflexive and self-referential way. Traditional life scripts, such as the male breadwinner model or the life-long marriage, for instance, become obsolete, which also results in a shift of the content and functionality of intergenerational communication and

knowledge transfer. This again amplifies individualism and further reduces the significance of traditional institutions, such as old age as the bearer of wisdom in this example. Consequently, a growing number of traditional institutions forfeit their significance and their organizing function for the individual life. This is particularly true for the Church which is losing influence in a society that is characterized by both secularization and an increasing pluralization of religious convictions and cults (Ebertz, 1997; Gabriel, 1992; Hervieu-Léger, 1990; Hitzler, 1996; Luckmann, 1991). One could argue that traditional institutions do not completely disappear in post-modern societies because of an inertia that is inherent to all societal institutions. Without any doubt, though, their status undergoes a profound change. They have to legitimate themselves and open up for a discourse which is increasingly becoming a global one.

Technological advancement in terms of communication and transportation has accelerated the process of globalization. Two decades ago a world that had been divided into two politically incompatible systems started to become more like a “global village” (Nolan, 1999). On the one hand, global processes and events across the world influence individual and institutional decisions and action opportunities; on the other hand, individual and institutional decisions became relevant on a global scale (Beck et al., 1999; Giddens, 1990). Although Western Europe in its cultural history has never been really isolated globally, there are two unprecedented issues in the course of present globalization (see Crouch, 2004). First, with the promotion of free trade by international agreements and the advancement of information and transportation technology, both the national financial and labor markets have become globally integrated and geographically mobile. This has significantly reduced the influence of and options for interventions for national states which in turn has resulted in a wave of deregulation (Michie & Smith, 1995; Sassen, 1996). Second, unprecedented in its history, Europe has become the target of a net inward migration movement. When – via media or in real life – people of different social backgrounds, religious convictions, and traditions of manners and customs meet each other, we can always expect various cultural

effects (Beck, Sznaider & Winter, 2003; Huntington, 1993; Lash, 1993; Lash & Urry, 1994). One could hypothesize that the post-modern trend towards heterogeneity and dissolution of traditions will neutralize these effects in the future. Today, though, multi-culture is a reality in most European societies and contributes to their pluralization.

Phenomena of Contemporary Social Change

The sociological debate sketched above suggests that contemporary European societies are subject to three highly intertwined trends: the uprising of post-modernity that results in individualization and pluralization, the process of globalization with various political, economical, and cultural effects, and, finally, rapid technological advancement in the information and communication technologies. The following sections will further investigate these issues with a focus on the relationship between the sociological and the psychological level of analysis. The aim is to demonstrate how developments on the societal level may affect the life of individuals. First, evidence will be presented for how the supposed trends of social change have affected the labor market, the organization of working life, and institutions of social community such as the family. The figures presented here are all derived from official census data as provided by the Federal Statistical Office (*Statistisches Bundesamt*), and from statistics published by international organizations such as the International Labour Organization (ILO) or the Organization for Economic Co-operation and Development (OECD). Because of the complexity of this issue, this presentation will necessarily be a brief summary of the most important aspects only (for detailed analyses, see Crouch, 2004). Second, a mechanism that translates change on the societal level onto the individual level will be presented along with some empirical evidence for it. The individual level will be focused, elaborating the idea that social change brings about new demands for the individual. Finally, a selection of demands particularly relevant for the present study will be presented.

Sectors of Employment. Technological advancement and international specialization have caused a thorough change of the sectoral structure in the Western European economies.

Depending on the the level of abstractness and distance of economic activities from the production of material goods, one can distinguish six sectors of employment (Singelmann, 1978). The first sector comprises agriculture and extractive industries, the second manufacturing, construction, and utilities, the third all distributive activities such as the transportation of goods and products. Business services that still are related to production but do not handle them directly are represented in the fourth sector. These are, among others, banking, insurance, and legal services, but also architecture and engineering. The fifth sector covers all social and community services including welfare state activities and public administration. In the sixth sector, finally, we find personal services that are provided exclusively to individuals.

The change in the sectors of employment are by no means a recent phenomenon. Castells (1996), for instance, has tracked the employment structure in five industrialized countries back to the 1920s and reports a continuous decline of the agricultural sector together with an increasing importance of the services. Globalization and the increasing significance of the communication and information technologies, however, have accentuated this development. Whereas employment in agriculture, mining, and the production of goods has further decreased from the 1960s, there is a strong growth of employment in the community and social services and a moderate growth in business services (Esping-Andersen, Assimakopoulou & van Kersbergen, 1993). Optimistic theorists interpreted this change as a constant increase in the significance of knowledge (Bell, 1974): Post-industrialism should feature more abstract or even scientific employment. Some go even further and propose an adaptation of the employment structure to higher-order human needs (Inglehart, 1990, 1997). There is indeed ample evidence that globalization did not contribute to an overall decline of employment but rather has selectively boosted knowledge-intensive technologies in Western Europe (Organisation for Economic Co-operation and Development [OECD], 1997). It is also true, though, that certainly not every job that is created in the service sectors meets Bells (1974) criteria of a post-industrial employment which requires a

highly skilled or even scientific workforce. It is therefore always necessary to consider different levels of education when analyzing the sectoral changes of employment.

Segregation of Work and Family. From the beginning of the industrialization until the 1970s, work and family life have increasingly been segregated into completely different social spheres. They differed not only in the kind of individual relations that were predominant in the respective domain but also and most obvious in the gender roles that were attributed to them. Whereas relations in the work life can be characterized by a strict formalization on the basis of legally binding contracts, family life was (and still is) based on informal reciprocity and mutual responsibility (Mingione, 1991). Although the welfare state took over a growing proportion of responsibilities that were traditionally located in the families, this did not change that pattern in a substantial way. Of equal importance is also the fact that work has usually been an exclusively male domain, whereas the family was generally female dominated. This segregation had straight effects on the allocation of individuals on the labor markets. As a rule, most adult men were working full-time as employees, since part-time work was not compatible with the strong segregation ideal. Hence, it is no wonder that occupation oriented education was also dominated by men, especially after compulsory schooling. Married women, on the other hand, could be found in the family, where they cared for children and the elderly who both were not capable of working. Beginning from the 1970s, though, the segregation between work and family began losing its normative power. This fact can be demonstrated very conspicuously in two phenomena: The erosion of gender roles and the greater diversity of employment forms.

For the last four decades or so women have been progressively emancipating themselves from traditional gender roles. Women have gained more access to education and political power. A cohort comparison based on 2004 census data shows the increasing participation of women in education. Three selected indicators shall be presented here to demonstrate this fact: educational attainment, political power, and labor force participation. Among the 60 to 65 years old (in 2004), 27% of women but only 9% of men attained no

formal school degree. This disparity decreases to 13% versus 9% for the 45 to 50 years old and among the 30 to 35 years old, only 10% of women but 12% of man have no formal degree. An equalization can also be observed for the proportion of men and women who hold an university degree. In the oldest cohort, only 5% of women but 10% of men have graduated from university. For the 45 to 50 years old the figures are almost equal with 9% of women and 11% of men. In the youngest cohort, 11% of women and 12% of men hold an university degree. A significant increase could also be observed in the proportion of seats in parliament held by women. The United Nations Development Programme (2003) uses this figure as an indicator for women's political participation. In Germany, the proportion raised from around 9% in 1980 to 33% in 2005 which is among the highest worldwide. One of the most pronounced changes, however, is the increasing participation of women in the labor force. From 1990 to 2004, female economic activity increased by 14%, so that in 2004 the female economic activity rate was 50.4% (ages 15 and older). We will come back to the implications that the change of gender roles has for families after discussing the second phenomenon that challenges the segregation model.

Organization of Working Life. The erosion of gender roles is only one, though very important, indicator for the dissolution of the segregation between work and family. Another one is the growing diversity of employment forms which is also indicative of the transition from the Fordist model towards a more flexible organization of employment. The Fordist (or bureaucratic) model is characterized by some premises that were given until the 1970s but are no longer tenable today. First, men were expected to be full-time employed, where full-time refers both to hours per year and working years throughout life. Note that although alternative arrangements such as self-employment were possible and in some cases regarded as necessary, they constituted a rare exception from the rule. Second, unemployment should be a rare experience and even non-existent for women who were – with some specific exceptions – not regarded as participating in the labor market at all. Where the market itself failed to

ensure this kind of full employment, governments were expected to intervene into the economies so that major recessions could not occur.

From the early 1970s, the Fordist structures as characterized above started to decline. This development is indicated by the decreasing proportion of men in the work force, the increase of female labor participation, the growing diversity of working forms other than the typical full-time employment, and finally by high unemployment rates. The increase of unemployment rates is particularly pronounced. Because unemployment is both an economic and a social policy concept, different figures exist. However, they all point in the same direction. Until the 1960s, the unemployment rates in Western Europe nowhere exceeded 3%. In Germany, only 0.44% of the non-dependent population was unemployed in 1960. Shortly after the German reunification, in 1991, the unemployment rate reached 6.3% and since then almost doubled to 11.0% in 2005. This dramatic increase is partly attributable to a rise of labor participation in women, especially those who are married and after some years of absence with young children returned to work (Meulders, Plasman & van der Stricht, 1993). Although unemployment is nowhere randomly distributed across the population, Germany is a case in point for a strong concentration of unemployment in certain social groups. Particularly high unemployment rates can be found among women, the less skilled, and foreign workers (Glatzer et al., 1992). Furthermore, the effects of the conversion from a command economy to a market economy in East Germany accentuated this economic development. Whereas in 1991, shortly after German unification, the unemployment rate was around 10.3%, it has reached 20.6% in 2005. The unemployment rate in some rural areas of the former GDR even exceeded 25%. That such figures have influenced the distribution of power on the labor markets and thus affect the rights and working conditions of the employees is self-evident.

A first important indicator for the diversification of working conditions in the course of the fade-out of Fordist production structures and the declining segregation between work and family is a change in the working time of employees. Since the 1970s one can observe a

general trend towards a decrease of working time both in terms of hours per years and of the length of occupational life spans. In the first quarter of 2004, about 7.2 million German employees reported working part-time, which is 2.4 million or 51% more than in 1991. Overall, about 23% of all employees worked part-time in 2004. For women, this figure is much higher and oscillates around 40%. There is a considerable debate in the literature about the significance of part-time work (Blossfeld & Hakim, 1997; O'Reilly & Fagan, 1998). On the one hand, it is argued that part-time work is associated with both lower employment rights and lower welfare benefits and thus tends to produce dissatisfaction with the employees (Visser & Hemerijck, 1997). On the other hand there are surveys that argue for an acceptance of part-time work, especially among women. For instance, part-time work is reported to be more satisfactory when the child care infrastructure is bad (O'Reilly, 1994). Although the decline of working time across the life span is a long-term process starting in the 18th century, the recent decline rates are very impressive. Whereas in 1960 the average German effectively worked 2,081 hours per year, 1987 it were only 1,620 hours (Maddison, 1991). Vacations, holidays, part-time work and other reductions of working time but also longer phases of (secondary and tertiary) education are mainly responsible for this trend (Ausubel & Grübler, 1995). Note, however, that although this trend applies to all industrialized societies (with the exception of Japan), the figures primarily reflect the reduction of working time in males' occupational biographies.

Another type of atypical employment that is lively discussed in the literature is temporary or limited contract work. The main problem that temporarily employed workers face is that they can accumulate only limited rights that are usually related to the length of employment. Although statistical evidence suggests that the discussion on temporary employment is rather exaggerated, there are certain subgroups in the populations that are highly affected by this trend. Overall, 8% of all gainfully employed were temporarily employed in 2004 as compared to less than 7% in 1991. Temporary employment particularly concerns younger employees. About 35% of all employees between 15 and 20 years, 24% of

all between 20 and 25 years, and still 15% of all between 25 and 30 years had no permanent contract. In the average, this is about 20% of all employees between 15 and 30 years in 2004 as compared to 11% in 1991. Furthermore, many employees may *feel* more temporary because of the known redundancy and high unemployment rates (OECD, 1997).

Working conditions have also diversified with regard to self-employment and related types of atypical work such as freelancing or home working. The increasing prevalence of self-employment is a very recent trend (Meager, 1993). Until about the 1990s, self-employment had been declining or had remained stable throughout the Western industrial countries and has gained significance since then. Whereas in 1991 self-employment made about 5% of all employment, 4.2 of 38.8 million or almost 11% were self-employed in 2004. It is highly doubtful, though, whether these figures reflect new levels of entrepreneurship and initiative taking, or rather describe the decrease of employees' rights and security. Self-employment is especially prevalent among immigrants and members of ethnic minorities who, for various reasons, fail to achieve attractive positions within the regular labor market (Haller, 1997). Boegenhold and Staber (1991) argue in the same vein and provide evidence that the present self-employment is hardly correlated with real entrepreneurial status. About 50% of all self-employed in Germany are still working for only one single customer, which usually is their former employer. These self-employed are often doing the same job without profiting from the benefits of social security and other workers' rights that are granted for the regularly employed. The facts that the rise of self-employment coincides with the phases of economic stress and that self-employment is very often associated with business failure support this interpretation.

One of the main causes of the increasing amount of part-time and other atypical (i.e., post-Fordist) working conditions is the need of employers to organize employment more flexibly with regard to changes in the market situation. There are two kinds of flexibility that are relevant in the present context (cf. Nielsen, 1991). Firstly, there is the kind in which flexibility is achieved by less constraining agreements and regulations with regard to the

disposability of employers, less protection for their health, safety, and security, more variable payment through productivity or sales-related wages components, and, ultimately, more flexible working hours. Sometimes this kind of flexibility is referred to as numerical flexibility. The second kind of flexibility is referred to as functional flexibility (Hirst & Zeitlin, 1990) or polyvalency (Kern & Schumann, 1987). Functionally flexible employees are organized in working teams with flat hierarchical structures and are equipped with a variety of skills that allow their allocation to different tasks. One can evaluate the increasing numerical and functional flexibility on the labor markets both in an optimistic and a pessimistic way. Optimists point out the dissolution of rigid hierarchies and command structures, the possibilities of individualized careers, the return of the complex diversity that was typical to premodern work organization, the decreased monotony of work, and the dissolution of rigid production lines. In times of a decreasing segregation of work and family, flexible working arrangements can be regarded as a necessary prerequisite for the compatibility between these two domains of life. Pessimists, though, warn about new insecurity and unpredictability, the attack on the family by economic forces, and the dramatically increased risk of unemployment that flexibility brings along. The increased diversity of working forms reflects more precarious working conditions with limited rights for the social security of the employees. We will come back to these issues when discussing the psychological effects of social and economic change.

Institutions of Social Community. The process of modernization is not only characterized by a decreasing segregation between men and women, but also by increasing differences between the generations. Both trends have deeply influenced the institution of family in Western Europe. Again, it is instructive to contrast the current development against the standard model of family that was prevalent until the mid of the last century. For this purpose, Crouch (2004) has introduced several comparative parameters of family life. According to the author, the mid-century model was characterized by a segregation of roles and prevailing gender stereotypes. The family concept was very strong, as indicated by high

levels of female domesticity, low average age of marriage, both high marriage rates and high fertility rates, and low rates of divorce. Also, the proportion of children born out of wedlock was low. As already stated above, all these characteristics were made possible by a division between paid economy and the household, which practically was a segregation of gender roles. Not only was this model highly normative in almost all strata of the society, but also universally prevalent for the majority of families. The families in Germany of the 1960s were highly representative for this model (Bak et al., 1989; Chesnais, 1992; Coleman, 1996): About 55% of all women were not in paid employment, the marriage rate for women was 53.30%, and the mean marriage age was 23.70 years. Total fertility rates reached 2.37 children per woman, of whom only 6.30% were born illegitimate. The crude divorce rate was around 6 per thousand first marriages per year. These figures significantly changed both in terms of means and in terms of variability, making cohort differences particularly pronounced. National census data for 1990 (see also Chesnais, 1992; Coleman, 1996) shows an decrease of women not in paid labor to about 48%. The mean marriage age increased to 26.50 years and only 48.50% of women were married. The most significant change, however, was in the total fertility rate which dropped to 1.39 children per women, i.e. below replacement, and was among the lowest in Western Europe. Of these children, 11.10% were born out of wedlock. The increase in the mean marriage age and the higher proportion of illegitimate children are related to higher rates of cohabitation, before couples marry or separate (Kuijsten & Strohmeier, 1997). All these figures have to be interpreted against a background of increasingly diversifying patterns of family structure resulting from divorce and remarriage. First, the divorce rate climbed to 11 per thousand first marriages per year, which means that approximately one in three marriages would separate at some point in time. This resulted in a high prevalence of singles and single-parent families. The proportion of one-person-households has climbed from about one fifth in 1950 to about one third today and only a minority has reported to live this way of life consciously and voluntarily, even if one considers only those younger than 55 years (for details, see Schneider, Rosenkranz &

Limmer, 2000). Second, most of the divorced remarry after a more or less enduring phase of single parenthood, which results in complex structures of kinship between and within families.

All these trends described have contributed to the diversification or pluralization of the postmodern families (Lüscher, Schultheis & Wehrspaun, 1988) and promoted a de-institutionalization of the family (Tyrell, 1985). Many plausible causes are discussed in the sociological literature. Some authors argue that occupational demands for higher mobility and flexibility of the employees are detrimental for a stable marital and family life (Huinink, 1995; Meyer, 1992; Vaskovics & Rupp, 1995). The adjustment of family issues to economic necessities and circumstances may be regarded as an expression of "responsible parenthood" (Kaufmann, 1988), which, however, resulted in childlessness for many. Furthermore, the postmodern loss of traditions, lower legal and social barriers for the revision of decisions (such as that for a life-long marriage), an extended welfare system, and the increased educational and economical participation of women have disequilibrated the traditional concept of family that developed during industrialization. Whether or not one can talk of a general decay of the family is, however, a highly disputed question (see Nave-Herz, 1998). Undoubtedly, changes have taken place, but there are also indicators for stability in the family domain. Despite the diversification taking place, parenthood has not lost its normative power for the large majority of individuals (Herzog, Böni & Guldimann, 1997; Huinink, 1995; Kaufmann, 1995; Nave-Herz, 1996). And despite the increasing differences between the generations, intergenerational solidarity (Kohli, 1997; Vaskovics, Buba & Früchtel, 1992), mutual confidence, and a sense of responsibility (Büchner, Fuhs & Krüger, 1996; Oswald, 1989) is still very high. In the following analysis we may therefore assume that family is still a relevant institution but we will have to focus on aspects that have changed rather than on the stable ones.

Psychological Demands Resulting From Social Change

Given the manifold societal tendencies, psychologists are interested in the consequences that social change has for individuals. It is argued that hardly any development on the societal level affects the individual life and development in a direct way (Pinquart & Silbereisen, 2004). Rather, these trends are transmitted through micro-level systems like the occupational setting or the family (Elder, 1974) and are mediated by various institutional filters (Blossfeld, Mills, Klijzing & Kurz, 2005). One of the most influential research tapping into this issue was conducted by Glen Elder. He investigated the effects of the Great Depression in the 1920s on the lives of families (e. g., Elder, 1974) and of World War II on the lives of men who were recruited into the active army service (e. g., Elder, Shanahan & Clipp, 1994, 1997). Based on theoretical considerations from life-course sociology and on empirical findings from his research, Elder (1985) introduced five principles that clarify the relation between the sociological macro- and micro-level.

First, under the condition of social change disparities between claims and resources or between goals and accomplishments may emerge. If these disparities are highly relevant for the individual, loss of control will be the consequence. The individual will try to regain control in what Elder (1985) calls the *control cycles*. Second, social change produces *situational imperatives* which are new behavioral requirements or new demands of the situation. This is an important point, which needs further clarification. One can think of social change as being change in the opportunity structures for individual action. On the one hand, some new opportunities may emerge for which the individual has not yet acquired adequate behavioral patterns that are demanded by the new situations. On the other hand, opportunities for customary behavioral patterns may wane, making them no longer applicable to the new situation. That given, new demands emerge which have to be dealt with by the individual. Take as an example the increasing internationalization of a company and the consequences for the employees. In order to seize the opportunities that emerge from new markets, the management may tell their employees to acquire foreign cultural knowledge, and to learn languages or modern ways of communication. Simultaneously, the growing number of

foreign customers makes old ways of communication no longer feasible. Those who, for whatever reasons, are not able to switch to the new behavioral pattern have to expect negative consequences. This relates to, third, the *accentuation principle* that states that during social transitions, resources become more salient. Those who already know one foreign language, for instance, will better cope with the demand of learning a new one than those who are confronted with learning a foreign language for the first time. Which resources are useful for which demands is an open empirical question, though. However, we might assume that also personality characteristics may play an important role (Caspi & Moffit, 1993; Elder & Caspi, 1992; Pinquart & Silbereisen, 2004). Elder (1985) states that those personality characteristics that are adaptive for coping with demands of social change will be accentuated in periods of transition. Fourth, consequences of social change on the life-course vary according to the stage at which individuals experience it. This *life-stage principle* was demonstrated by Elder (1974) with regard to the impact of the economic crisis in the 1920s. Members of different cohorts were quite differently affected by the economic hardship their families experienced. Whereas older children (or at least boys) gained independence from parental supervision by the need to contribute to the family income, younger children were more likely to suffer from the negative outcomes of family economic hardship. Blossfeld and colleagues (2005) have replicated Elder's life-stage principle, demonstrating that individuals who undergo major biographic transitions such as the one from school to work are particularly at risk for the negative effects of globalization. For a full understanding of individual effects of social change it is, fifth, important to acknowledge the *interdependency* of biographies. Because social change is frequently transmitted by social institutions such as the family, a systems approach is highly recommended.

To summarize, three issues are particularly important if one wants to analyze the effects of social change for individual agency. First, one has to identify and quantify the amount of situational imperatives that are translated from the societal level into individual demands. A demand is the aspect of social change relevant for individual action and self-

regulation. By focusing on demands it is important to consider social institutions such as the family, the labor market, or the civil society that translate, filter or enhance macro-societal change. Second, it is necessary to consider protective and risk factors of the individuals. Some of these factors may be tied to the individuals position in the life-course, which is correlated with certain resources and vulnerabilities; others may be independent of age. Many may represent external opportunities for the mastery of demands in question. Third and finally, one has to investigate the subjective experience of social change, because in the end it is the individual who is actively coping with the demands of social change and is striving to reclaim lost or threatened control.

The number of situational imperatives or demands that result from the complexity of the various aspects of social change are potentially very large. The multi-causal and multi-directional character of societal tendencies has hardly allowed a systematic taxonomy of demands resulting from social change. An exception is a publication by Silbereisen and colleagues (2006) who made an attempt to identify and collect those demands that may concern the majority of adults living in Germany today. This required to select only those demands that are linked with more universal developmental goals in this age group. Although the authors do not claim that their collection is a theory-driven or necessarily complete taxonomy of demands resulting from social change, their selection does reflect most of the societal trends introduced above.

At a very abstract level of analysis, the authors were able to identify two broad dimensions of demands that correspond to their individual experience and their necessary mode of coping. The first cluster of demands is characterized by a requirement to learn circumscribed but novel skills and behaviors. In changing societies, this kind of demand is almost self-evident and most appropriately fits into Elders (1985) idea of situational imperatives. Changing workplace characteristics require advanced training of the employees in new technologies, languages, or other skills. Old skills and modes of behavior, in turn, become less important and have to be abandoned.

The second cluster comprises demands that reflect the structural uncertainty resulting from social change (Blossfeld et al., 2005; Blossfeld & Hofmeister, 2006; Mills & Blossfeld, 2003). Several of the social and economical tendencies introduced above contribute to a growing uncertainty of the career and the family life. Globalization, technological change, and the employers need for flexibility are maybe the most influential for the domain of work and occupation. These tendencies tend to produce ambiguity and increase both the number and the volatility of parameters necessary for (long-term) decision making. In other words, many factors need to be taken into account and concurrently many of these factors are constantly changing which makes prediction difficult. Hence, such tendencies condense into demands that require a (re)orientation in and sometimes a total redefinition of the situation. Thus, it has become more difficult for the individual to predict his or her career path, place of employment, working hours or even the occupational task profile. The increased volatility of the labor markets and increasing levels of flexibility are most obviously reflected in the growing proportion of precarious work relations. This has made the planing and scheduling of the own occupational career more difficult. Simultaneously, occupational careers have become increasingly individualized. Although career uncertainty is particularly emphasized at transitions such as the one from school to work, it pertains to nearly all age groups and occupational domains. Economic uncertainty also furthers uncertainty concerning family building and child rearing. However, there are more direct effects in the family domain that result from the postmodern trends towards loosened commitments. Contemporary relationships and marriages are no longer tied together by economic necessities and strong social restrictions, but based on (more volatile) mutual affection. These demands are amplified by the fact the the implicit and explicit knowledge about family-related issues can no longer be simply adopted from one's parents.

Before we investigate how individuals cope with all these demands, one final remark on demands is necessary. Although the main focus of this study is to investigate coping with potentially negative consequences of social change, social change undoubtedly entails

various advantages for the individual (Pinquart & Silbereisen, 2004). The new possibilities to shape one's life-course according to one's own ideas or technological means that facilitate transportation and communication are only two examples of how social change has extended the developmental potential of individuals. One thus should not forget that social change does not only bring new demands for the individual but also quite a lot of augmented freedom.

Mastering Demands of Social Change

How individuals cope with demands of social change depends on different factors both within and outside the person. Pinquart and Silbereisen (2004) discuss these factors emphasizing the role of personal and social resources, coping strategies and contextual opportunities and constraints. The model presented in this paper provides an interesting heuristic for the mechanism of adaptation to social change. The present study will focus on coping strategies as an important link between individual demands and developmental outcomes. Coping is not only the most proximal process that can be investigated with regard to demands of social change. Various authors also suggest that processes of self-regulation as expressed in the different ways of coping represent the key to the understanding of development under the condition of social change, because social changes activates and emphasizes self-regulatory competencies (Brandtstädter, 2006; Wrosch & Freund, 2001).

Given the various demands of social change that individuals are confronted with, it is important to investigate the different ways of coping with them. Such a research endeavor would be absolutely impracticable if one wanted to collect all single adaptive reactions that individuals show under the different living conditions. Another disadvantage of a descriptive approach would be lacking of a theoretical rationale for the adaptiveness or maladaptiveness of the single ways of coping. For these two reasons, the next section will introduce a theoretical approach which systematically classifies all possible aspects of adaptive behavior into broad categories and which proposes criteria for their adaptiveness under different contextual conditions.

Before turning to this issue, a clarifying note on the relationship between developmental goals and demands is necessary. The demands investigated here relate to developmental goals in the domains of work and family. This relationship can be characterized as hierarchical and instrumental. It is hierarchical because demands are subordinate to developmental goals and acquire their valence from the fact that their attainment usually serves the attainment of the higher order developmental goals. For instance, all demands reflecting the increased uncertainty in work life would be irrelevant if a successful career was not a central developmental goal in adulthood. The relationship also is an instrumental one because demands constitute instrumental constraints for the achievement of developmental goals. The attempt to overcome work related uncertainty, to continue the example, is not an end in itself but only made in order to pursue one's occupational career. This applies both to demands of learning new skills and demands of growing uncertainty in both domains of life investigated and is consistent with theoretical perspectives that emphasize the hierarchical nature of human goals (Klinger & Cox, 2004; Vallacher & Wegner, 1985). Keeping the hierarchical and instrumental relationship in mind is important. Strictly speaking, the theoretical approach presented below focuses on the mastery of developmental goals. However, when one acknowledges that developmental goals and demands (at least in the way defined here) are closely related with each other, the application of the theory on coping with demands is straightforward.

Life-Span Theory of Control

The life-span theory of control (J. Heckhausen & Schulz, 1993, 1995, 1998; Schulz & Heckhausen, 1996) is an innovative theoretical framework that can further the understanding of the resilience that individuals demonstrate in the face of demands from social change. This theory has some important advantages for the investigation of the subject matter. With the exception of SOC theorists (e.g., Baltes & Baltes, 1990) and some personality theorists such as Erikson or Loevinger (see Cavanaugh, 1990; Schulz & Ewen, 1993) there have been few attempts to formulate psychological theories that embrace human development over the entire

life span. However, since human development is a lifelong process such an approach is essential (Baltes, 1987). Furthermore, the theory makes propositions about the long-term functionality or adaptiveness of behavior and thus introduces empirical criteria for the formulation of scientific hypotheses.

Theoretical Considerations and Empirical Evidence

The claim to explain behavior on different levels and throughout the life span as well as the possibility to specify *a priori* which behaviors and cognitions are adaptive is due to the general concept of control, which builds the foundation of the theory. The concept of control has a long tradition in both applied and scientific psychology and has spawned a large number of theories and empirical data. Empirical evidence to support the importance of the concept of control comes, for instance, from research on helplessness and locus of control (Abramson, Seligman & Teasdale, 1978; Rothbaum, Wolfer & Visintainer, 1979; Rotter, 1966; Seligman, 1975), perceived contingency in infancy (Finkelstein & Ramey, 1977; Gunnar-von Gnechten, 1978; Ramey & Finkelstein, 1978), illusory control (Langer, 1975; Langer & Rodin, 1976), effectance and mastery motivation (Harter, 1974, 1975), intrinsic motivation (Deci & Ryan, 1985; Lepper, Greene & Nisbett, 1973), self-serving bias (Snyder, Stephan & Rosenfield, 1978; Weisz, 1980, 1981) or predictability of events (Burger & Arkin, 1980). Various other authors such as Kuhl (1981), Skinner (Skinner, Chapman & Baltes, 1988), Brandtstädter (Brandtstädter & Baltes-Götz, 1990), Averill (1973), S. C. Thompson (1981), Bandura (1995), Lefcourt (1981, 1983), Dweck (Dweck & Rupucci, 1973), Miller (Miller & Seligman, 1975), or Brehm (1966), to name only a few, have contributed to the understanding of control. They demonstrated that a sense of control is a predictor of health and well-being (Bandura, 1989; Fiske & Taylor, 1991; Gurin & Brim, 1984; Lachman & Burack, 1993) and even longevity (Langer & Rodin, 1976; Seligman, 1975). The scientific interest in control was provoked by observations that children derive pleasure from controlling the level of stimulation in interaction with their environment (Groos, 1901). Indeed, modern developmental psychology has not only shown a general contingency

awareness in neonates (Solkoff & Cotton, 1975) but also that activities directed at controlling external events can be observed very early in human ontogenesis (Janos & Papousek, 1977; Papousek, 1967). This preference for behavior-event contingencies over event-event contingencies (Singh, 1970) is most likely an innate characteristic of the motivational system. J. Heckhausen and colleagues (J. Heckhausen, 2000; J. Heckhausen & Schulz, 1995, 1999) propose that striving for control over the environment is the fundamental principle of motivation and that it is tightly connected to the readiness to detect and produce behavior-event-contingencies. This idea can be found in various psychological and anthropological approaches. Bühler's concept of *Funktionslust* (Bühler, 1919) addresses this phenomenon from a different theoretical perspective. In the individual psychology of Adler the motivation for control was identified as a "necessity of life" (Ansbacher & Ansbacher, 1956) and the Polish anthropologist Malinowski identified the need to master the world as the driving force in magic rites of primitive cultures (Malinowski, 1955).

Primary Control: Selective and Compensatory Aspects

Based on a distinction originally proposed by Rothbaum, Weisz and Snyder (1982), J. Heckhausen and Schulz (J. Heckhausen & Schulz, 1993, 1995, 1998; Schulz & Heckhausen, 1996) differentiate between primary and secondary control striving. Primary control striving refers to the attempt of the individual to bring the environment into line with one's wishes, i.e. to "change the world to fit the needs [...] of the individual" (J. Heckhausen & Schulz, 1995, p. 285) or "to change the world so that it fits the self's needs" (Rothbaum et al., 1982, p. 8). Note that the term "need" used here includes developmental goals. There is an important distinction that has to be made with regard to the functionality of primary control striving. Because humans are endowed with open behavior programs (Lerner & Busch-Rossnagel, 1981a; Mayr, 1974), the complexity and plasticity of human behavior is vast. This implies the need for selecting a developmental trajectory, makes this selection more prone to failure and this in turn requires strategies of compensation (J. Heckhausen, 1999; J. Heckhausen & Schulz, 1993, 1995). Consequently, one can distinguish between strategies of *selective*

primary control that promote selection and strategies of *compensatory primary control* that promote compensation. Selective primary control is targeted at the expansion and maintenance of control within a selected domain of specialization. This is mainly accomplished by the investment of internally controllable resources such as effort, time, and abilities. Whenever the developmental reserve capacities of the individual are deficient, compensatory primary control strategies should be activated. Various theoretical models that broach the issue of compensation – such as the model of selective optimization with compensation (Baltes, 1990; Baltes & Baltes, 1989, 1990), Salthouse's compensation model (Salthouse, 1987) or Adler's theory of personality (Adler, 1916, 1927, 1930) – converge in the notion that compensation requires an increase of some other behavioral component (see also Bäckman & Dixon, 1992). Compensatory primary control comprises strategies that are directed at the instrumental recruitment of help or advice from others, the employment of technical aids, or the activation of activity-external skills. Compensatory secondary control has been shown to have a major influence on the promotion of health (Albrecht & Goldsmith, 2003; Rhodes, 2004), well-being (Hobfoll & Vaux, 1993; Krause, 2001), or coping with stress (Manne, 2003; Turner, 1999).

Secondary Control: Internal Processes of Control Striving

Many theoretical approaches that have been cited above actually focus on primary control striving and have widely ignored a second process that needs to be distinguished. Rothbaum and colleagues (1982) have introduced secondary control to refer to internal processes of control striving by the adaptation of the individual to environmental influences so that he or she "flows with the current" (p. 8). Analogies of the primary and secondary control striving can be found in the distinction between assimilation and accommodation (Brandtstädter & Renner, 1990), problem vs. emotion focused coping (Folkman et al., 1986), and active vs. avoidance coping (Holahan & Moos, 1987). According to the conception of J. Heckhausen and Schulz (J. Heckhausen & Schulz, 1998), secondary control works hand in hand with primary control and is sometimes metaphorically called its "confederate" (J.

Heckhausen & Schulz, 1999, p. 606). As was the case for primary control, secondary control can be differentiated according to the two basic characteristics of human behavior. When it has a selective function and is aimed at the promotion of a specific goal-directed primary control striving, it is referred to as selective secondary control. Selective secondary control comprises all psychological processes that enhance the motivational commitment to primary control striving. It can also be referred to as metavolitional strategies (Kuhl, 1984) that keep the individual's effort on the chosen activity and prevents distractions from it by concurring goals or activities. Selective secondary control is thus particularly important in the volitional phase of the action cycle (J. Heckhausen, 1991; H. Heckhausen & Gollwitzer, 1987).

The compensatory function of secondary control aims at the maintenance of motivational and emotional resources after failure. Compensatory secondary control is very different from the other three modes of control – selective primary, compensatory primary, and selective secondary. It is not aimed at supporting a specific goal striving but at maintaining the motivational resources for long-term primary control. It is activated when primary control has failed and the individual has to deal with the negative consequences of failure. This aspect of motivation is essential just because human behavior is prone to failure. Its importance becomes obvious if one recapitulates the negative effect of failure on the emotional and motivational resources of the individual. Beyond the affective consequences of failure (Rhodewalt & Morf, 1998; T. Thompson, Davis & Davidson, 1998; Wilson & Kerr, 1999), one can observe effects on self-esteem (Craparo, Hines & Kayson, 1981; Flippo & Lewinsohn, 1971; Midlarsky, Berger & Kilpatrick, 1981; Morrison, 1979), perceived self-efficacy (Bandura, 1982), mastery (Harter, 1974), and also on expectancies about the controllability of events in general (Abramson et al., 1978; Seligman, 1975). Failure can thus seriously threaten the individual's capacity for primary control, especially if it is related to aspects that are relevant to the self.

The variety of compensatory secondary strategies used by adults is large. Among others, adjustment of aspiration levels (Elster, 1983), attributional bias (Bradley, 1978;

Kelley & Michela, 1980; Luginbuhl, Crowe & Kahan, 1975; Snyder et al., 1978; Zuckerman, 1979), finding value and meaning in failure (Averill, 1973; Bulman & Wortman, 1977; Burgess & Holmstrom, 1979; Frankl, 1963), reinterpreting own life history (Greenwald, 1980; Ross, 1989), or strategic social comparisons (Burgess & Holmstrom, 1979; Schulz & Decker, 1985; Taylor & Lobel, 1989; Taylor, Wood & Lichtman, 1984; Wills, 1981) have been subject to intensive empirical investigation. Which type of secondary control actually is employed by the individual is highly dependent on both his or her personality characteristics and situational properties and, actually, we know too little to make reliable predictions on this behalf. But irrespective of the actual kind of compensatory secondary control strategy all these efforts have in common the fact that they protect the individual's motivational and emotional resources (J. Heckhausen & Schulz, 1995). They are, in other words, phenomenologically different but functionally equivalent forms of the same adaptive mechanism in human motivation.

General Propositions for Adaptive Action Regulation

The theoretically substantial content of the life-span theory of control is the proposition of the functional primacy of primary control. Primary control striving does not only ontogenetically precede secondary control but also has a higher adaptive value for the organism (J. Heckhausen & Schulz, 1995, 1999; Schulz & Heckhausen, 1996). Controlling events in the environment allows the organism to maximize its developmental potential by optimizing the relevant environmental conditions. The theoretical tradition that has introduced concepts such as competence (De Charms, 1968), self-actualization (K. Goldstein, 1939), growth motivation (Maslow, 1955), or becoming (Allport, 1955) are all based on this fundamental principle. Human functioning is thus defined as adaptive when it promotes and maintains the capacity for primary control across the life span, i. e. in the long run (J. Heckhausen & Schulz, 1998). Consequently, secondary control strategies are subordinate to primary control and serve to “maintain, protect, focus, and enhance motivational resources for primary control striving” (J. Heckhausen & Schulz, 1999, p. 606). To strike the right

balance between selection and compensation and between primary and secondary control in order to maximize the capacity for primary control is thus the central challenge of self-regulation throughout the life span (J. Heckhausen & Schulz, 1993, 1995). In order to predict the adaptive value of primary and secondary control, one needs to consider the factors that determine the outcome expectancies for goal attainment in any given situation. Situations differ in the extent that they provide favorable opportunities and unfavorable constraints for goal-directed action. Striving for primary control under unfavorable opportunity structures may devour internal and external resources, unnecessarily increase the risk of failure, and thus threat the long-term capacity for primary control. Hence, in order to maximize their capacity for primary control, individuals should take into account the factors that constitute the objective expectancies for goal attainment and adjust their control striving to them in an adequate way. Basically, one can distinguish between two types of factors that influence the outcome expectancies of actions: individual resources and external opportunity structures. In the following, a definition and a short overview of these factors will be presented. Subsequently, we will turn to the empirical evidence that the adjustment of control strategies in the way proposed here has indeed positive consequences for the individuals' capacity for primary control.

Internal Resources. J. Heckhausen and Schulz (1995) have introduced biological factors as a prototypical example for individual resources that shape the expectancies for goal attainment. The pattern of the vast majority of biological factors is strongly correlated with age and resembles an inverted U throughout the life span (Schaie & Hertzog, 1983). There are, however, many more internal resources that are not biological in nature and follow different trajectories. Education and socio-economic status are among the most general resources, task-specific skills and abilities among those most tangible and most closely related to a certain goal. Furthermore, there are a number of quite general psychological resources such as optimism (Scheier & Carver, 1987), self-efficacy (Schwarzer, 1992), or internal control beliefs (Rotter, 1966) to name only a few that are often discussed in the

literature. All these resources define the individuals' capacity for primary control and thus determine the balance of primary and secondary control that is adaptive. There is much empirical evidence that individuals actually adjust their primary and secondary control striving to their capacity for primary control (Brandtstädter & Renner, 1990; Brandtstädter, Wentura & Greve, 1993; Folkman, Lazarus, Pimley & Novacek, 1987; J. Heckhausen, 1997; Peng, 1993).

External Opportunity Structures. Individual development is development in a context of opportunities and constraints (J. Heckhausen & Schulz, 1995). A developmental analysis is thus always incomplete if it fails to take contextual factors into account. The second determinant of an adaptive balance between primary and secondary control are thus external opportunity structures for primary control (J. Heckhausen, 1999; J. Heckhausen & Schulz, 1995). Various opportunity structures are correlated with age and were investigated under the label of age stratification in societies (Hagestad, 1990; Hagestad & Neugarten, 1985; Kohli & Meyer, 1986; Riley, 1985). Institutional legislation (Mayer, 1987; Mayer & Huinink, 1990) and normative conceptions about development held by individuals (J. Heckhausen, 1990) structure the life span and channel developmental and life-course processes into biographical tracks (Blossfeld & Mayer, 1988; Featherman & Lerner, 1985; Geulen, 1981). Legal schooling and retirement age are prominent examples. Not every societal opportunity structure, though, is structured by age and there are quite a lot of important opportunities and constraints that apply to a broad age range. These structures may be described in terms of regional socio-structural characteristics in the zone of proximal development of individuals. One interesting approach in describing such structures has been taken by Peter Benson who introduced the concept of (external) developmental assets. The research of Benson and colleagues (e.g., Benson, 1997; Leffert et al., 1998; Scales, Benson, Leffert & Blyth, 2000) has focused on children and adolescents, but the idea can easily be transposed to other age ranges or the entire life span. Developmental assets are comprised of subjectively represented opportunity structures that are provided by social networks and other institutions of

community such as schools, the local infrastructure, and opportunities for the constructive use of leisure time. These structures seem to have a strong influence on positive development in children and adolescents; insufficient developmental assets, on the other hand, are risk factors for problem behavior and negative developmental outcomes (Scales et al., 2000). Research on developmental assets very lucidly demonstrates the influence of contextual variation on individual development and individual developmental trajectories. Similar conclusions can be drawn from – mainly sociological – research on the effects of social capital, economic infrastructure or political empowerment on the developmental potential of individuals (e.g., Diener & Suh, 2000; Heliwell, 2001; Krishna, 2002; Morgan, 1997; Trigilia, 2001).

Developmental Barriers

In the last section, the life-span theory of control was introduced as a general concept for the understanding of action regulation. A taxonomy of control strategies has been presented together with propositions on the adaptive value of these control strategies conditional on internal resources and external opportunity structures. We will now particularly focus on one aspect of the theory and emphasize the significance of external opportunity structures for the evaluation of the adaptive value of the different control strategies. The analysis of external opportunity structures is especially relevant for research dealing with social change. Social change can be considered as change in the external opportunity structures for the individual: Whereas some opportunities emerge, others become less accessible. The next section will introduce the concept of developmental barriers as a case in point for strongly diminished opportunity structures. We believe that under such conditions *individual* self-regulation becomes particularly important (Held, 1986; Wrosch & Freund, 2001) so that such an investigation can offer important insights into the dynamics of individual behavior. Two criteria are constitutive for the concept of developmental barriers. First, developmental barriers are characterized by a very limited capacity for primary control for a not foreseeable period of time. This means that neither effort nor waiting will change the situation for the better. A developmental barrier is thus subjectively represented by both

low action-outcome-expectancies and low situation-outcome-expectancies (for definition, see (H. Heckhausen, 1977a, 1977b; J. Heckhausen & Heckhausen, 2006). An unfavorable males-to-females ratio due to selective migration, for instance, may be considered a developmental barrier for establishing an intimate relationships or starting a family. Note, that the definition of developmental barriers does not include any aspect of novelty or interruption of accustomed action patterns. Therefore, it is a quite general concept and not at all bound to situations where opportunity structures change rapidly.[1] However, the interesting dynamics of self-regulation at a developmental barrier are most likely to be detected in situations where barriers emerge quickly and unexpectedly. This is definitely the case under conditions of social change. Such changes do not only call for immediate reaction but also prevent individuals from an incremental withdrawal into developmental niches (see Bronfenbrenner, 1979, 1992).

Second, developmental barriers strictly relate to long-term processes of developmental goal attainment (e.g., building of an occupational career or parenthood) which is situated on another level in the goal hierarchy and possess a different centrality for the individual as compared to everyday goals and projects (Carver & Scheier, 1998; Powers, 1973; Vallacher & Wegner, 1985). Developmental goals are characterized by long-term investment of effort and commitment, high relevance for the self, usually a complex social embeddedness, and at least implicit normative value sets. Predominantly due to their social embeddedness and their normative character, the mastery of developmental goals is dependent on available sociostrucural opportunities. This fact is, to some extent, also true for very early and not consciously selected developmental goals such as the acquisition of language, where developmental barriers may occur as well. As a consequence of this dependency, developmental goals are also highly susceptible to changes in opportunity structures and thus to social change in general. Furthermore, there are strong mutual interrelations between different developmental goals. These interrelations become manifest, for instance, in positive and negative trade-offs between different developmental goals or in time sequential patterns

which are sometimes referred to as developmental timetables (Dekovic, Noom & Meeus, 1997; Schmitt-Rodermund & Silbereisen, 1999). There is indeed some evidence that even the sequence and timing of different developmental goals are subject to social change and thus reflect the shifting societal opportunity structures (Silbereisen, 2000). Another implication is that success or failure in the attainment of a developmental goal can have manifold and serious consequences for various domains of life. This is a central aspect that distinguishes the effects of success and failure in the attainment of developmental goals from other, everyday goals and projects.

Hence, the constitutive characteristic of a developmental barrier is a seriously declined capacity for primary control concerning a developmental goal. Although there is some novelty in the concept of developmental barriers, it is strongly related to two established lines of thought. First, it incorporates field theoretical thinking and terminology as originally introduced by Kurt Lewin (1935) which is indicative of the broader theoretical background on which the concept of developmental barriers was developed. One constitutive characteristic of the Lewinian life space are boundaries that impede the space of free movement and thus resemble the concept of developmental barriers. Second, it ties in with the idea of developmental deadlines originally introduced by Wrosch and Heckhausen (1999). The connection to this theoretical framework will be briefly illustrated in the following section. Subsequently, we will turn to propositions on adaptive behavior when confronted with developmental barriers derived from the life-span theory of control.

Developmental Deadlines: Barriers Correlated With Age

J. Heckhausen and Schulz (1995) have pointed out that biological and societal constraints generate “a time-ordered structure of opportunities and challenges” (p. 289). J. Heckhausen (1999) has further elaborated this concept and presented age-graded opportunity structures for various developmental tasks throughout the life span. Many developmental tasks are thus attainable within a more or less narrow time window of favorable opportunities. Before and after this time window, the attainment of the respective

developmental task is either very difficult or simply not possible. Parenthood is a case in point for an age-graded opportunity structure, although the time window itself is relatively broad. Nevertheless, there exist biological, normative, and legal constraints that prevent both very early and very late parenthood. In order to investigate the dynamics of self-regulation at the critical transitions from favorable to unfavorable opportunity structures, J. Heckhausen (1999; see also J. Heckhausen, 2002; J. Heckhausen, Wrosch & Fleeson, 2001) introduced the action-phase model of developmental regulation. This model extends the general Rubicon model of motivation (H. Heckhausen, 1991; H. Heckhausen & Gollwitzer, 1987) and applies it to the developmental domain by including the deadline as another discrete and motivationally relevant transition. The deadline is a point in time after which action opportunities become severely limited so that individuals have to respond to this limitation in a specific way. Developmental deadlines were studied for the sample cases of childbearing (J. Heckhausen et al., 2001), romantic engagement (Wrosch & Heckhausen, 1999), or the transition from school to work (J. Heckhausen & Tomasik, 2002). The major difference between developmental deadlines and developmental barriers is the significance of the time dimension. However, this difference is not a fundamental one. Actually, J. Heckhausen and colleagues (2001) propose in a footnote that “one could also extend the concept of developmental deadlines beyond the time dimension to situational action opportunities in general. Such a general concept might be conceived as 'transition to a condition of lost opportunities' and would include situations when, in the process of goal striving, the internal and external prerequisites for goal attainment are lost. Examples would be a teacher, who in is early career is confronted with radically vanishing job opportunities in the school system, or an athlete, who in the process of training for peak performance suffers an incapacitating and irreversible injury” (p. 401). The concept of developmental barriers is such an extension of the developmental deadline concept as proposed by J. Heckhausen and colleagues (2001) as it refrains from the temporal perspective. This extends its range of application to various domains of developmental and motivational psychology, which are for practical reasons only

limited for developmental deadlines. Simultaneously, however, it allows reference to both theory originally formulated for developmental deadlines (J. Heckhausen, 1999, 2002, 2005; J. Heckhausen & Schulz, 1993, 1995, 1998; Poulin, Haase & Heckhausen, 2005; Schulz & Heckhausen, 1996; Schulz, Wrosch & Heckhausen, 2003; Wrosch, Scheier, Carver & Schulz, 2003a; Wrosch, Schulz & Heckhausen, 2004) and related empirical findings (J. Heckhausen et al., 2001; J. Heckhausen & Tomasik, 2002; Lang & Heckhausen, 2001; Nagy, Köller & Heckhausen, 2005; Wrosch et al., 2003b; Wrosch & Heckhausen, 1999; Wrosch, Heckhausen & Lachman, 2000; Wrosch, Schulz & Heckhausen, 2002) of which some will be presented below.

Adaptive Action Regulation Facing Developmental Barriers

What patterns of control strategies do the life-span theory of control propose to be adaptive under the conditions of a developmental barrier? Is there empirical evidence for this adaptiveness? These two questions will be addressed in the following section. Their discussion will start with an overview of the effects of persistent goal striving under unfavorable conditions and then turn to the antagonist compensatory secondary strategies.

Facing a developmental barrier, the likelihood of failure is high because the external opportunity structures necessary for goal attainment are per definition very unfavorable. Individuals thus inevitably expose themselves to repeated experiences of failure which can seriously harm their emotional balance (Rhodewalt & Morf, 1998; T. Thompson et al., 1998; Wilson & Kerr, 1999), self-esteem (Craparo et al., 1981; Flippo & Lewinsohn, 1971; Midlarsky et al., 1981; Morrison, 1979), or self-efficacy (Bandura, 1986). There is also clear evidence that repeated experiences of uncontrollability and failure may result in ruminative coping (Nolen-Hoeksema, Parker & Larson, 1994) and a depressive symptomatology (T. Thompson et al., 1998), or “learned helplessness” (Abramson et al., 1978; Miller & Seligman, 1975; Seligman, 1975). At best, the aspired goal cannot be attained while wasting valuable emotional, motivational and other resources. Developmental barriers, however, do not only threaten the attainment of certain developmental goals or the mastery of certain

developmental transitions. Maladaptive reactions to developmental barriers can undermine the emotional and motivational potential of the individual, leading to negative consequences in other domains of life. Continued goal striving, as an example for maladaptive behavior at a developmental barrier will inevitably accumulate failure and consume costly resources that otherwise might have been invested more successfully into the optimization of other life domains (Baumeister & Scher, 1988; Neese, 2000). Studies performed by Ward and colleagues (Ward, Lyubomirsky, Sousa & Nolen-Hoeksema, 2003) suggest that the inability to withdraw commitment and continuing rumination about own failure is disruptive to the initiation of instrumental behaviors such as the implementation of potential solutions to problems (see also Lyubomirky & Nolen-Hoeksema, 1995; Lyubomirsky, Caldwell & Nolen-Hoeksema, 1998; Lyubomirsky, Tucker, Caldwell & Berg, 1999). Staying persistent and believing in one's own competencies – i.e. exerting selective primary and selective secondary control – which has been shown to be related to subjective well-being and health under favorable opportunity conditions thus turns maladaptive when the capacity for primary control is limited. Continued goal striving then rather undermines primary control in the present and in the future.

Baumeister and Scher (1988) have linked misguided persistence with self-defeating behavior that is, at least partly, grounded in the heritage of Protestant work ethic (see also Rodgers, 1978). A very important factor for continued goal striving despite limited probability of success seems to be the amount of time and energy already invested into the endeavor. This situation has been referred to as "entrapment" (Brockner & Rubin, 1985; Rubin & Brockner, 1975) or "escalation of commitment" (Staw, 1976, 1997). A review of this issue is presented by Karlson, Juliusson and Gärling (2005). Proponents of this idea emphasize that a strong commitment to something that turns out unattainable may lead to even more commitment in the face of failure (Teger, 1980) and that this tendency is increased if the public self-concept is in danger of humiliation (Baumeister, 1982; Schlenker, 1980). However, the reluctance to wasting the initial investment is the primary motive to keep

commitment high and issues of self-presentation seem to be particularly relevant in later stages of entrapment (Teger, 1980). Note, that the tendency towards entrapment is not limited to certain personality characteristics, but is quite universal. Experiments performed by Rubin and Brockner (Rubin & Brockner, 1975) suggest that almost 90% of subjects persist beyond the point where further commitment objectively and obviously will not return this investment. Another important issue that has been analyzed with regard to maladaptive commitment are erroneous expectancies concerning success (Feather, 1961, 1962; Janoff-Bulmann & Brickman, 1982). Factors that are associated with an overestimation of expectancies under favorable conditions seem to be the same for unfavorable conditions. One example is high self-esteem which is usually linked with high persistence (Perez, 1973; Schalon, 1968; Shrauger & Sormann, 1977). Counterproductive persistence in subjects high in self-esteem was demonstrated by McFarlin and colleagues (McFarlin, Baumeister & Blascovich, 1984). They found that subjects high in self-esteem tended to persist at working on unsolvable problems and that this persistence was even intensified by failure.

Carver and Scheier (2005) have discussed continued effort from the perspective of expectancy-value theories (Atkinson, 1964; Bandura, 1997; Klinger, 1975; Kuhl, 1984; Vroom, 1964), too, but also put a special emphasis on emotions that accompany failure after repeated efforts. If the affective response to failure includes frustration, irritation or even anger, individuals are likely to increase in exertion and engage more (see Harmon-Jones, Sigelman, Bohling & Harmon-Jones, 2003; Lewis, Sullivan, Ramsay & Allessandri, 1992; Mikulincer, 1994). Consistent with this notion, Frijda (1986, p. 429) argues that anger always implies some hope for success. If the affective response includes sadness, depression, dejection, and grief, individuals tend to disengage from further effort (see Klinger, 1975; Lewis et al., 1992; Mikulincer, 1994; Wortman & Brehm, 1975). In uncontrollable situations, emotions of depression can thus have an adaptive function when they allow individuals to withdraw effort for an unattainable goal.

On the contrary, compensatory secondary control, i.e. the capacity to withdraw both

effort and commitment from an unattainable goal, is an adaptive facet of effective self-regulation because it reflects the given opportunity structures (Wrosch et al., 2003a, 2003b): It is important to know under which circumstances to hang on and when to let go (see Pyszczynski & Greenberg, 1992). Note that the adaptive value of disengagement, however, is not limited to situations with limited opportunity structures. More general reasons for disengagement that are repeatedly discussed in the literature are the inevitable need for selection throughout the life span (Schulz & Heckhausen, 1996), different availability of resources at different phases of the life span (Baltes, Cornelius & Nesselroade, 1979; J. Heckhausen & Schulz, 1995), and also constraints placed by limited life time available (Ericsson & Charness, 1994). Developmental barriers are thus just one special aspect, that has in common with the others the fact that the respective capacity for primary control is limited. This is important to mention because most empirical evidence that will be presented in the following does not directly resemble deficiencies in *external* opportunity structures but rather refers to a capacity for primary control limited for some other reason.

A lot of evidence for the adaptive value of compensatory secondary control under the condition of limited capacity for primary control comes from research on aging. This research is guided by the consideration that, although there are to some extent developmental gains in old age (Baltes, 1987; Labouvie-Vief, 1982; Simonton, 1990), this segment of the adult life span is dominated by decreased performance (Baltes & Kliegl, 1986; Denney, 1984; Salthouse, 1985) and the subjective expectation of developmental losses (J. Heckhausen, Dixon & Baltes, 1989). In other words, opportunity structures decrease with increasing age (J. Heckhausen, 1999; J. Heckhausen & Schulz, 1995) and developmental barriers emerge. The declining capacity for primary control should thus be reflected in both a higher preference for secondary control striving and its increased adaptiveness. It is hypothesized that this shift in preferences for control striving may explain both the stability of perceived control in adulthood (Lachman, 1986a, 1986b) and the so called “paradox of well-being” (Brandtstädter, 2002; Kunzmann, Little & Smith, 2000). Numerous studies provide evidence

that older adults, as compared with younger, report higher levels of secondary control striving (Peng, 1993; Wrosch et al., 2000; Wrosch & Heckhausen, 1999), accommodation (Brandtstädter et al., 1993; Brandtstädter & Renner, 1990; J. Heckhausen, 1997), or emotion-focused coping (Folkman et al., 1987; Quayhagen & Quayhagen, 1982). There are also some studies which demonstrate positive correlations between secondary control and measures of subjective well-being in old age. One recent example are studies on age-related macular degeneration by Wahl and colleagues (Wahl et al., 2005; Wahl, Becker, Burmedi & Schilling, 2004). A few studies published are age-comparative which allow us to test the hypothesis of age-differential relations between control strategies and successful development. Peng (1993), for instance, examined correlations between primary and secondary control and measures of subjective well-being across adulthood. In contrast to younger adults, secondary control in older adults was positively correlated with personal growth and positive relations with others.

Rothermund and Brandtstädter (2003) presented results from a longitudinal study on coping with performance deficits in older age. The authors assumed that effort investments (i.e., primary control) should be subject to a “principle of diminishing returns” with increasing age (Brandtstädter & Wentura, 1995) thus prompting individuals to shift from an assimilative (i.e., primary control) into an accommodative (i.e., compensatory secondary control) coping style. Furthermore, they expected age-differences in the correlation between coping strategies and longitudinal change of self-evaluation. Accommodative coping was assessed by measuring the personal aspiration level. The results reported by Rothermund and Brandtstädter (2003) corroborated their hypotheses. The authors did not only show a shift in the preference for assimilative vs. accommodative but also the hypothesized “diminished returns” of assimilative coping. Also, whereas in younger ages (change in) assimilative action was negatively correlated with (change in) perceived deficits, the correlation in older age groups was positive. Most importantly here, the authors demonstrated that an increase in perceived deficits had a stronger negative impact on contentment among those participants

who increased or did not change their level of aspirations than among participants who decreased their personal standards. A further analysis showed that this buffering effect of accommodative coping emerged only for the older participants in the sample. The results of this study are impressive, because the authors demonstrated the mechanism between diminished resources, waning efficiency of primary control, and buffering effects of secondary control for a topic which is central for the maintenance of the self in old age.

Wrosch and colleagues (2000) investigated coping with financial and health stress in three different age groups of adults. Beyond primary control striving, two aspects of secondary control, namely positive reappraisals and lowering aspirations, were analyzed for correlations with a composite measure of life satisfaction. The authors did not find that lowering aspirations had a different effect on well-being in the different age groups. The impact of positive reappraisals on well-being, however, increased with age and became the most influential predictor for subjective well-being in the oldest age-group. Furthermore, the positive correlation of primary control striving with subjective well-being decreased with increasing age which suggests that primary control striving loses its effectiveness for goal attainment when the capacity for primary control is limited.

Another set of findings that can be reported as evidence for the adaptiveness of compensatory secondary control comes from research on developmental deadlines. In two studies, J. Heckhausen, Wrosch and Fleeson (2001) investigated developmental regulation around a critical life-span transition, the “biological clock” for childbearing. The authors introduced an action phase model that included an “actional phase” before a developmental deadline and a “post-deadline phase” with limited opportunities and increased constraints (see J. Heckhausen, 1999). They sampled women to fall either into the condition of regular pre-deadline, urgent pre-deadline or post-deadline. In the first study reported by the authors, participant's developmental goals were assessed, an incidental memory measure was performed and emotional well-being was measured. Both the developmental tasks nomination and the incidental memory task indicated significant differences between the

three groups. Nomination of developmental tasks, for instance, showed that whereas urgent pre-deadline women were highly engaged in child-related goals, post-deadline women were in the average disengaged from them. For post-deadline women, the authors also found negative correlations between performance in the incidental memory task and measures of subjective well-being. Not being disengaged from child-bearing topics in this group was also correlated with a lower positive affect and higher negative affect. In the second study, a similar sampling strategy was performed additionally to include pregnant women. The authors assessed primary and secondary control strategies with regard to childbearing, developmental goals and depressive symptoms. In the average, pre-deadline women reported substantially more goal engagement strategies (selective primary, selective secondary, and compensatory primary control) and substantially less compensatory secondary control than post-deadline women. Furthermore, phase-congruent endorsement of selective primary control was correlated with less depressive symptoms. The latter result, although correlational in nature, is an important indication for the differential adaptiveness of control strategies conditional on the opportunity structures for the attainment of developmental goals.

Wrosch and Heckhausen (1999; see also Wrosch, 1999) studied the activation and deactivation of partnership goals in a sample of recently separated and recently committed individuals. The focus of this study were differences in control strategies between younger and older adults. Based on remarriage statistics, the authors assumed that the opportunities for finding a new partner decline as a function of chronological age (see Braun & Proebsting, 1986; Teachman & Heckert, 1985). Although this study did not involve a discontinuous deadline with a sudden and substantial shift from a favorable to an unfavorable developmental ecology, the age difference between the two age groups investigated was large enough to presume a significant difference in opportunity structures. Cross-sectional results of their study showed that recently separated older adults, as compared to the younger ones, reported fewer gain oriented partnership goals, a lower investment of goal engagement control strategies, and, most interestingly here, higher endorsement of compensatory

secondary control strategies for partnership related goals. A comparison of younger and older adults who had recently formed an intimate relationship showed that these findings could not alone be attributed to age or cohort effects. Longitudinal analyses revealed a significant interaction effect between age and compensatory secondary control predicting change in positive affect for the separated adults. In young adults, compensatory secondary control was negatively correlated with change in positive affect. Detailed analyses showed that this change was mainly attributable to the disengagement aspect of compensatory secondary control. In older adults, compensatory secondary control was positively correlated with change in positive affect. However, it was self-protection rather than disengagement that was responsible for this correlation. The authors concluded from these findings that control strategies adjusted to the (age related) opportunity structures were predictive for improvement in psychological well-being, although it remained unclear why the different aspects of compensatory secondary control had such age specific effects.

Wrosch and colleagues (2003b) report three studies that examined the associations between goal disengagement and subjective well-being. Study 1 investigated goal disengagement and reengagement into alternative goals in a sample of undergraduate students who should imagine themselves in three different situations where goals become unattainable. In the first situation, opportunities to pursue a goal vanish. In the second, unexpected life changes and negative life events deteriorate opportunity structures. And finally, in the third, there is for some reason a need to focus personal resources on managing different and more essential life goals. Goal disengagement across the three situations explained significant proportions of variance in indicators of well-being such as perceived stress, intrusive thoughts, and self-mastery. Furthermore, reengagement into alternative goals was also highly predictive for well-being. Together, the two control strategies explained up to a quarter of variance in the measures of subjective well-being. The second study reported by Wrosch and colleagues (2003b) was conducted as a replication of the first one. However, younger and older adults were recruited in order to test age effects. The authors assessed the

endorsement of goal disengagement and goal reengagement strategies facing an imagined need to “stop pursuing an important goal in my life “(p. 1500). The authors report having found a significant three-way interaction between age group, goal disengagement and goal reengagement predicting positive and negative affect balance. For younger adults, goal reengagement predicted the most positive affect balance, but only if disengagement was low. For older adults, high disengagement together with low reengagement was associated with the most negative affect balance, whereas other combinations of disengagement and reengagement did not significantly differ from each other. These two studies emphasize the importance of reengagement in alternative goals after having disengaged from unattainable ones. Consistent with their theoretical argumentation (see Wrosch et al., 2003a), the authors found that disengagement might not be *per se* adaptive in an unfavorable ecology. Disengagement derives its adaptive value from the fact that disengagement frees up resources that are otherwise bound to unattainable goals. These resources may be used to pursue alternative goals for which opportunity structures are more favorable. This is an important issue which requires us to consider whether individuals do have alternative goals at all. We will come back to this issue when discussing the research questions.

The third study reported by Wrosch and colleagues (2003b) included parents of children with cancer and parents of medically healthy children. The authors hypothesized that a severe disease of their children would challenge parents in continuing their regular activities and pursuing routine goals. Whereas in the groups of parents with healthy children neither disengagement nor reengagement made a significant difference for the parents' depressive symptomatology, both control strategies were negatively correlated ($\beta \approx -.50$) with the outcome variable in the group of parents whose children developed cancer. As expected, the normatively less expected situation made self-regulation processes around goal disengagement and reengagement particularly paramount (cf. Wrosch & Freund, 2001). It is noteworthy that the authors did not find any mean differences in the control strategies between the two groups of parents. In other words, parents of children with cancer did not

more easily disengage from old goals and reengage in new ones. Nevertheless, the correlations with subjective well-being were substantially different.

Conceptually similar was a study by Schulz, Wrosch, Yee, Heckhausen and Whitmer (reported in Wrosch et al., 2003a) who investigated health goals of older adults with functional impairments. Among those who were more severely disabled higher dwelling on unattainable goals was correlated with greater distress. Again, this was not the case for adults with moderate disability.

Some studies investigated coping with uncontrollable demands during extreme life situations such as caring for handicapped children and terminally ill patients. King, Scollon, Ramsey and Williams (2000) asked parents of children with Down Syndrome to write narratives about finding out that their children had a chromosome anomaly. The content of those narratives was analyzed and coded on different dimensions. Additionally, measures of subjective well-being, stress-related growth and ego development were collected both concurrently and in a follow-up two years later. Two factors empirically emerged from the content ratings of which the one interesting here was labeled “accommodation” by the authors. Stories rated accommodative often included “paradigmatic shifts” of how the parents viewed the world and themselves. We believe that there is some substantial overlap between the concept of paradigmatic shifts in the study by King and colleagues (2000) and our concept of goal disengagement. Accommodative shifts around life transitions such as the one investigated here certainly include a redefinition of the individual goal hierarchy or at least of goal values. For instance, in accommodative stories parents reported giving up of predictions about their child's future. The results of the study were impressive. Accommodation did not correlate with concurrent subjective well-being whereas other content dimensions (such as closure or denial) did so in a positive way. However, accommodation was the only one content dimension to be correlated positively with concurrent stress-related growth and ego-development. When predicting change of the outcome variables over a period of 24 months, accommodation was the only content dimension that positively predicted stress-related

growth. The other content dimensions predicted change in stress-related growth negatively. However, change in subjective well-being was positively affected by the other content dimensions. These findings suggest a differential functionality of accommodative narratives with respect to different outcome variables. More specifically, there seems to be some general trade-off between happiness and personal growth that has to be made. However, whereas non-accommodative stories that produced happiness also resulted in a decline of personal growth, higher personal growth through accommodative coping did not negatively affect well-being. It is thus not only possible to be "sadder but wiser", but also to personally grow with adversity while enjoying a sense of contentment. The results suggest that the trajectory to the latter development skirts through accommodation. This conclusion may at least hold for life transitions such as the one investigated here. Parenting a child with Down Syndrome is a highly critical life event, but it is one in which it is possible to adjust or even to thrive. We can thus only speculate how generalizable the findings of this study are.

Tunali and Power (1993) offer further insights into this topic when they generally discuss adjustment in families of developmentally handicapped children. With a special emphasis on families with autistic children, the authors argue that successful coping with the challenges such families have to face needs to include a redefinition of what constitutes the fulfillment of the needs of every family member. Specifically, parents of disabled children are challenged with tremendous time constraints, social rejection and sometimes social exclusion, and the need to reorganize marital needs. The extraordinary circumstances of such families call for a redefinition of cognitive and behavioral patterns that are usually considered ideal, because the situation cannot be changed or, in other words, is highly uncontrollable. They require disengagement from various goals and needs such as career success, social participation and leisure activities but also intimacy, companionship and privacy in marriage. The authors report findings of a study comparing need definitions in mothers of autistic and non-autistic children. Results showed that mothers of autistic children, as compared to the mothers of non-autistic children, "(1) placed less emphasis on career success and were more

likely to believe that mothers of young children should not work outside the home; (2) spent more leisure time with their extended family; (3) placed less emphasis on others' opinions regarding their children's behavior; (4) placed more emphasis on spousal support and the parental role in their discussions of marriage; (5) had more difficulty understanding their children's behavior; and (6) showed greater overall tolerance of ambiguity" (p. 952). More importantly, the more of these characteristics were shown by mothers of autistic children, the higher levels of satisfaction with life they reported. The redefinition of basic needs thus was correlated with life adjustment. Tunali and Power (1993) conclude from these findings that disengagement from normative goals and needs is an important competence that allows these families to find new and more appropriate ways and means to satisfy their needs. Rather than emphasizing career and career advancement, for instance, parents may stress the importance of "being a good mother" or "being a good father". Rather than defining a good partner as one who provides intimacy, both partners might emphasize emotional and physical support they give and receive. In the end, staying committed to no longer appropriate ideals obstructs the way to alternative cognitions and actions from which these parents are more likely to derive emotional well-being and satisfaction.

We know from various studies on coping with care giving situations that emotion focused coping such as wishful thinking (Neundorfer, 1991; Pruchno & Resch, 1989), emotional discharge (Haley, Levine, Brown & Bartolucci, 1987), or escape-avoidance (Stephens et al., 1988) is positively correlated with depression and anxiety. Problem focused coping such as problem solving (Vitaliano et al., 1990) and instrumental coping (Pruchno & Resch, 1989) are usually negatively related to depression and anxiety. However, some studies on care giving report contrary results and the crucial difference seems to be the specific controllability of the situation. Williamson and Schulz (1993), for instance, showed that problem solving was correlated with increased depressive mood for care givers' coping with uncontrollable memory deficits. In a prospective study on AIDS related care giving, Moskowitz and colleagues (Moskowitz, Folkman, Collette & Vittinghoff, 1996) analyzed the

ways of coping of caregivers both prior and after their partners' death. The authors found interesting results for the correlation between positive reappraisal and change in mood. Whereas positive reappraisal was not correlated with negative mood during care giving, it was negatively correlated during bereavement. This finding is consistent with a study reported by Mattlin, Wethington and Kessler (1990) who found that respondents using positive reappraisal in response to death of a loved one were less prone to experience symptoms of depression and anxiety. If a situation turns absolutely uncontrollable, some coping responses otherwise irrelevant or even dysfunctional turn out highly adaptive.

Some studies, however, only partly support the adaptivity of compensatory secondary control. For example, Wadsworth, Raviv, Compas and Connor-Smith (2005) found that coping with chronic financial strain in terms of acceptance, cognitive restructuring, distraction and positive thinking was negatively related with both internalized and externalized problem behavior. The authors labeled this coping dimension “secondary control” according to the “responses to stress model” (Compas et al., 1999; Connor-Smith et al., 2000) which was used in their research. They did not find such a buffering effect with regard to the coping dimension they labeled “disengagement”, though. However, it is important to note that coping strategies that were subsumed under this dimension comprised avoidance, denial and wishful thinking. The coping strategies thus do not correspond to the definition of disengagement as used in the life-span theory of control (J. Heckhausen, 1999; J. Heckhausen & Schulz, 1995; Schulz & Heckhausen, 1996). The last example shows that it is important to be careful when defining compensatory secondary control and operationalizing the construct. In order to avoid confusion, some final words need to be said about the functional association between the two compensatory secondary control strategies investigated here and their functionality in the adaptive process of coping with developmental barriers.

Compensatory secondary control comprises a variety of coping strategies and we assume that most of them are more or less functionally equivalent. Although they point at

different psychological processes, their common aim is the protection of the motivational and emotional potential necessary for long-term primary control. An important distinction, though, has to be made between the self-protective and the disengagement aspects of compensatory secondary control. Whereas disengagement strategies imply some kind of seclusion of the action cycle, self-protective compensatory secondary control is situated somewhere in between goal engagement and goal disengagement. On the one hand, self-protective strategies can help coping with unexpected setbacks and temporary failure. On the other hand, they may serve disengagement by protecting the individual from the negative consequences of disengagement itself. We thus believe that under the conditions of developmental barriers both aspects of compensatory secondary control are functional. However, certain differences between the two aspects of compensatory secondary control can be expected, too. First, self-protection and disengagement are supposed to be differently associated with opportunity structures. Figure 1 depicts the hypothesized differences in the two aspects of compensatory control striving as a function of developmental barriers. One can see that self-protective strategies set in at a lower threshold and gradually increase with higher developmental barriers. This sensitivity to contextual constraints allows self-protective strategies to affect well-being at a broad range of opportunities and constraints. Furthermore, under extreme developmental barriers self-protective strategies are likely to lose their meaning. Disengagement in Figure 1 shows a different characteristic. It is supposed to set in at higher levels of developmental barriers. Also, the shift into disengagement is a more radical one because people usually avoid a motivational “no man's land” (Beckmann & Gollwitzer, 1987; Gollwitzer, Heckhausen & Steller, 1990). The second difference between self-protection and disengagement concerns their assumed association with subjective well-being . The linking mechanism between self-protection and well-being is a proximal one so that direct and short term effects can be expected. Disengagement, on the other hand, is associated with psychological costs in the short run. Giving up goals and particularly central and important ones is aversive. Most likely, thus, disengagement needs to be simultaneously

supported by self-protective strategies. Its beneficial effects on subjective well-being are rather indirect through (a) avoidance of repeated experiences of failure, (b) release of misdirected resources, (c) the ability to invest these resources in more promising goals and projects, and (d) capitalization on success in these goals and projects (cf. Wrosch et al., 2003a). Thus, the effects of disengagement are supposed to show up in the long-term and also be more sustainable.

Summary of Current Research Status

The first part of the introduction provided an overview of contemporary societal trends that are likely to affect individual development. We focused on changes in the sectors of employment, the segregation of work and family, and the transformation in the organization of the working life and in the institutions of social community. Subsequently it was demonstrated that in order to study individual effects of social change one has, first, to focus on individual demands that derive from the different societal trends, and, second, to consider how individuals cope with these demands. With the introduction of the life-span theory of control, a conceptual framework of coping was presented. This theory makes a distinction between primary and secondary control and emphasizes the importance of opportunity structures for the adaptability of the single control strategies. More specifically, it suggests that selective primary, selective secondary and compensatory primary control is adaptive under favorable opportunity conditions and compensatory secondary control is the best choice when opportunities are unfavorable. Keeping in mind the significance of opportunity structures we have introduced the concept of developmental barriers for which compensatory secondary control was defined as the most adaptive reaction. Following this theoretical elaboration, a review of relevant empirical studies was presented drawing from different domains such as gerontology or research on developmental deadlines. The studies reviewed provide empirical evidence that when opportunities for goal attainment are lacking giving up at a certain point can be more beneficial than further persistence. If an event is not controllable, attempts to change the situation are likely to result in failure. If not buffered by

self-protective strategies or disengaged from, uncontrollable situations pose an emotional and motivational threat to the individual and undermine his or her future capacity for primary control. Note, that this mechanism even applies to highly normative developmental tasks such as finding a partner or to very serious issues such as the care-giving to terminally ill patients. One thus cannot argue that self-protection and disengagement might be beneficial only for minor or insignificant goals and demands.

At some point in the course of the argument was also shown that reengagement in alternative goals might be the key to the adaptive value of disengagement. Adaptive behavior can thus be considered the selection of and investment in those action alternatives for which the opportunities are favorable. This notion is particularly interesting against the backdrop of individualization tendencies that were discussed at the very beginning of the introduction. When individuals cannot rely on predetermined paths to negotiate their life-course, they need to actively select those tasks and demands that are promising and abandon those tasks and demands for which opportunities are unfavorable and barriers for primary control are high. Self-regulation in terms of balancing primary and secondary control may thus become highly relevant when coping with demands of social change.

Hypotheses

The following section comprises the hypotheses of this study. The first and central one is derived from the theoretical framework introduced so far. The other two are exploratory in nature and thus to be regarded as research questions rather than hypotheses in a strictly scientific sense. These research questions will be explored in order to further understand and clarify the adaptive mechanisms that are tested.

Hypothesis 1

The life-span theory of control proposes that adaptive self-regulation needs to consider the opportunity structures for primary control. It proposes that ignoring the unfavorable opportunity structures and staying motivationally committed to unattainable demands is maladaptive, because it results in enduring experiences of failure which pose a

threat to motivational and emotional resources of the individual and thus undermine his or her capacity for primary control. Hence, the central hypothesis is that – other things being equal – individuals who face a developmental barrier – i.e. a very limited capacity for primary control – with respect to certain demands will be better off in terms of subjective well-being if they manage to disengage from the unattainable demands. In other words, disengagement from unattainable demands is regarded as a necessary condition for well-being. A first set of analyses will focus on this topic, exploring the hypothesized correlations in the domain of occupation and family. Primary and secondary control strategies for coping with occupational and family related demands will be linked with data on opportunity structures and measures of subjective well-being. The two life domains were selected because of their normative significance in the life-course and because the socially induced changes in these domains are of special public and scientific interest. Opportunity structures and thus also developmental barriers will be measured on the level of regions (comparable with counties) which offer a proximal context for the mastery of demands in the domain of work and family.

There are at least three reasons why this hypothesis is not trivial. First, goal disengagement is not always a socially accepted alternative (note such proverbs as “winners never quit and quitters never win”). This is, second, particularly true for the disengagement from demands related to normative developmental goals. It is not self-evident that individuals who probably have invested much time and effort into the pursuit of normative developmental goals will easily switch to a different motivational state without any psychological costs. Developmental goals which constitute an important part of the individual self-definition structure our daily activities and our interpretation of events (Cantor, 1994; Cantor et al., 1991) and are thus not easy to disengage from (Carver & Scheier, 1986a, 1986b; Carver, La Voie, Kuhl & Ganellen, 1988). The pursuit of developmental goals is socially highly appreciated and the disengagement from such goals is prone to formal and informal sanctions (Baltes et al., 1979; J. Heckhausen, 1999; Neugarten, 1968; Neugarten, Moore & Lowe, 1965; Udry, 1982). Both reasons could increase the psychological costs of

disengagement to an extent that might very well exceed its theoretically expected benefits. This consideration is particularly relevant if only cross-sectional or short-term effects are studied, because one would expect the potential psychological costs to fade out in the long run. Third, the developmental barriers investigated here may be high but not high enough to induce the disengagement process or to support well-being effects of disengagement. Although in some regions of Germany unemployment rates are elevated and opportunities for families rather disadvantageous, the overall economical and political situation is far from being totally hopeless, especially if compared to other societies. Since no research has yet been conducted on absolute levels of developmental barriers, it is difficult to make founded predictions on this issue.

Hypothesis 2

A subject that will be explored subsequently is the interindividual variation in the capacity to disengage from unattainable goals. Wrosch and colleagues (2003a) have proposed various self-related and personality processes that might be responsible or at least correlated with interindividual differences in how individuals react to unattainable demands. Of great relevance are attributional processes that influence the outcome expectancies of action and thus tendencies for continued goal striving or disengagement (see Klinger, 1975; Kukla, 1972; Roth & Cohen, 1986). One personality variable that has received much attention in a debate on its adaptiveness is positive illusions or optimism (Baumeister, 1989; Colvin & Block, 1994; Taylor & Brown, 1988; Taylor & Brown, 1994). The concept of optimism dates back to theological theodices where it was introduced in defense of God's goodness in view of the existence of evil (see Leibniz, 1710). Scheier and Carver (e.g., Scheier & Carver, 1985) have defined optimism as a generalized expectation of positive experiences and outcomes. Usually, optimism (and a certain level of positive illusions) are regarded as very favorable throughout the literature (Bedi & Brown, 2005; Chang, 1998; Creed, Patton & Bartrum, 2002; Isaacowitz, 2005; Mäkikangas & Kinnunen, 2003; Scheier et al., 1989; Scheier & Carver, 1987, 1992, 2001; Scheier, Carver & Bridges, 2001; Sweetman, Munz &

Wheeler, 1993). Individuals who expect that good things rather than bad things will happen are also believed to maintain focus and effort when facing difficulties. Optimists more extensively use a variety of coping strategies and are both physically and psychologically more healthy then pessimists (Carver & Scheier, 1999; Chang, 1998; Chang & Farrehi, 2001; Scheier et al., 2001; Scheier & Carver, 1987, 1992). One way in which optimism is supposed to affect the stress process is by modifying the appraisal of stressors as more challenging rather than threatening. The more positive appraisal protects optimists from premature disengagement. However, optimism might change its functional value under certain ecological conditions such as the occurrence of a developmental barrier. On the one hand, optimism may of course retain its capacity for self-protection and thus buffer negative self-evaluations, particularly in situations where serious negative consequences are likely (Carver et al., 1993). On the other hand, though, optimism may support illusory persistence and thus distract valuable resources from alternative goals and domains of functioning. Indeed, optimism was found to be negatively correlated with goal disengagement and withdrawal as a coping strategy (Aspinwall & Taylor, 1992; Harju & Bolen, 1998; Scheier et al., 2001; Scheier, Weintraub & Carver, 1986). Under unfavorable opportunities, this might turn out to be highly dysfunctional. Some evidence for a situation specific *negative* influence of optimism is provided by health psychological research. Unrealistic optimism (Weinstein, 1980; Wenglert & Rosén, 2000) was shown to affect the appraisal of personal susceptibility to health problems and to negatively influence both health and risk behavior (Schwarzer, 1994; Weinstein, 1982, 1984). Under some circumstances, optimism thus might be responsible for a careless and light-headed overestimation of the own control capacity (Abele, 1993).

These two effects of optimism are most likely not mutually exclusive, so that it is an open empirical question which one preponderates. Are optimists having a more easy time to disengage from unattainable demands because they are convinced that other opportunities will emerge in the future? Or do they rather stick to their positive illusions about the goal at

hand and thus are less likely to disengage? This question shall be investigated here in terms of an exploratory analysis, because there is no previous research investigating the conditions under which optimism furthers or hinders disengagement. However, given the vast evidence for the positive effects of optimism it is hypothesized that under unfavorable conditions optimism is positively correlated with measures of subjective well-being (*Hypothesis 2a*). Given the exploratory nature of these analyses, though, no other specific hypotheses will be formulated. Furthermore, it shall be investigated whether optimism influences the capacity to disengage from unattainable demands as measured by the respective control strategies. Here again it is hypothesized that optimism is not dysfunctional (*Hypothesis 2b*), but no further specifications of this hypothesis are made.

Hypothesis 3

The basic assumption of this study is that the inability to disengage from unattainable demands should be related with negative psychological outcomes because of the higher likelihood for repeated experiences of failure. However, disengagement from unattainable demands does not "automatically" result in well-being. A third set of analyses will thus explore a condition under which a net positive effect on well-being can theoretically be expected. Theoretical propositions from the life-span theory of control suggest that the maintenance of diversity and engagement in different life domains are key elements of resilience facing constrained opportunities. A similar proposition is made by Linville (Linville, 1987; see also Adelmann, 1994) who states that multiple self-identifications, the pursuit of multiple options, and the availability of backup goals can effectively buffer against failure-induced distress. Indeed, there is some empirical indication that it is not only the reduction of effort and the relinquishment of commitment with regard to an unattainable demand but the pursuit of substitute goals which turns out to be most adaptive (Ryff, 1989; Scheier & Carver, 2001; Wrosch et al., 2003b; Wrosch & Heckhausen, 1999). From that perspective, disengagement from unattainable demands would not (only) be functional because it inhibits experiences of failure and saves resources. The more important reason,

would be that it frees resources that may be invested into more attainable goals which, in turn, allow the individual to capitalize on success. From the perspective of the life-span theory of control, disengagement is functional only insofar as it allows reengagement with other more realistic goals. This proposition follows from the primacy of primary control. Moreover, taking up alternative goals can help to shift the individual's attention and other cognitive resources from the unattained goal (cf. Gollwitzer et al., 1990; Wrosch & Heckhausen, 1999). It is therefore expected that the effects of disengagement tested in Hypothesis 1 should be enhanced when individuals do not only disengage but simultaneously turn to aspects of their lives where they can take advantage of their accomplishments and successes. One alternative life domain that is interesting to investigate in the present context is engagement in an association, congregation or a citizens' group. This type of civic engagement is easily accessible without special restrictions and can thus be investigated in a general population. Such engagement can offer opportunities to pursue the normative goals which are not directly accessible in the restricted domains of work or family. Certain needs such as competence or affiliation can be met by civic engagement, too. It is hypothesized that individuals under unfavorable conditions who disengage from unattainable demands and become involved in alternative activities such as civic engagement will be better off in terms of well-being as compared to individuals who do only disengage or those who do not disengage at all (*Hypothesis 3a*). Additionally, it is hypothesized that individuals who engage in alternative activities such as civic engagement will report more disengagement from and less engagement in unattainable demands under unfavorable conditions (*Hypothesis 3b*).

These set of hypotheses are not trivial and could be falsified for at least two reasons. First, off-track investments in other life domains highlight the failure in the original domain of life. Individuals who decide to engage in civic activities and, at least temporarily, disengage from of pursuing their occupational career or family life make their decision publicly visible and may be confronted with antipathy in their social environment. Given the normative character of the life domains investigated here, negative social reactions are likely

and may require elaborated self-justification by the individual. This could even result in negative developmental outcomes. The second point is that engagement in other life domains may not fully be substitutive for the engagement in the original life domain, namely occupational career and the family. The life domains selected for investigation are highly normative and comprise important developmental tasks. Engaging in alternative tasks may not at all compensate for this fact. This could not only be due to the importance of normative developmental tasks for self and identity, but also because occupation and family are important sources for material and psychological resources.

Method

This doctoral dissertation is embedded in and builds on the theoretical framework and empirical data collection of the subproject C6 “Individual and Social Resources for Coping with Social Change” within the Collaborative Research Council 580 “Social Developments after Structural Change: Discontinuity, Tradition, Structure Building” funded by the German Research Foundation. The principal investigators of the subproject were Rainer K. Silbereisen and Martin Pinquart who developed its theoretical framework (Pinquart & Silbereisen, 2004) and implemented it in an empirical study which included, among others, measures on socio-demography, demands, control strategies, personal and social resources, physical and mental health, as well as subjective well-being (for details, see Silbereisen et al., 2006). The selection of variables, their operationalization, and the data collection is thus the achievement of the principle investigators who were supported by a team of research associates and research assistants. This makes the investigation of the present research questions a secondary analysis which, as usual, has both advantages and disadvantages. One disadvantage of a secondary analysis is that some variables that might have been interesting are not available or might have been measured in a way more appropriate for the present research questions. This disadvantage, however, is countervailed by both economical considerations and the availability of a strong intellectual support provided by all members of the research team.

General Sampling Procedure and Initial Sample

The data set analyzed is part of an ongoing longitudinal study and comprised its first cross-sectional wave assessed in Fall 2005. The participants were drawn from Mecklenburg-West Pomerania and Thuringia in East Germany, and from Schleswig-Holstein and Baden-Wurttemberg in West Germany to an approximately equal share from each state. These four states have been selected because they both represent old and new federal states of post-unification Germany and differ in their economic prosperity. Whereas Thuringia and Baden-Wurttemberg have the highest economic growth and lowest unemployment rates in the respective part of Germany, Mecklenburg-West Pomerania and Schleswig-Holstein have serious economic problems. The target areas for sampling were based on administrative counties within the federal states.[2] Mecklenburg-West Pomerania was divided into 18 target areas, Thuringia into 23, Schleswig-Holstein into 15, and Baden-Wurttemberg into 21. Within each target area sampling points from which to start random route sampling were selected from the ADM register which is representative for the German household population aged 14 and more years. The ADM is a sampling technique with three levels of selection (cf. von der Heyde & Loeffler, 1993). First, sampling points are randomly selected from all constituencies in Germany from which, second, households within the target areas are identified by random route. Within the households, third, appropriate persons are selected by a specified procedure. The selection of persons was stratified with regard to age, gender, educational status, and community size. The assessments were conducted as face-to-face interviews and lasted about 60 to 90 minutes. No compensation was paid.

The initial sample comprised N = 2,863 adolescents and adults aged 15 to 43 years, N = 698 (24.4%) from Mecklenburg-West Pomerania, N = 709 (24.8%) from Thuringia, N = 705 (24.6%) from Schleswig-Holstein, and N = 751 (262.%) from Baden-Wurttemberg. One half of the sample (52.6%) lived in communities with less than 20.000 inhabitants, 28.9% lived in communities with 20,000 to 100,000 inhabitants, and 18.5% lived in communities with more than 100,000 inhabitants. This is quite representative for the federal states studied

but as compared with the entire Federal Republic of Germany urban areas are underrepresented. The mean age of the participants was *M* = 31.23 (*SD* = 8.67) years and 45.9% were male. About one half of the sample (52.3%) has graduated from or was currently visiting a high-school. One quarter (23.1%) was in compulsory school and another quarter (24.6%) in college-bound education. About one half of the sample (54.1%) was not married, although this does not necessarily mean those subjects are not into a personal relationship. Another 37.9% of the sample were married, 7.4% were divorced, and only 0.6% were widowed. A little more then a half of the sample (52.3%) reported having own children. If participants had any kids, their mean number was *M* = 1.75 (*SD* = .84). Again about a half of the sample (51.5%) was in gainful employment, the other half (48.4%) was not. Four subjects (0.1%) refused to report their employment status. If the participants were employed then they worked in the average *M* = 36.10 (*SD* = 20.34) hours per week. If participants were not in gainful employment, they were either still in education (42.7%), unemployed (33.2%), homemakers (13.7%), on maternity leave (6.4%) or not employed for other reasons (4.0%). The descriptive statistics of the initial sample are once again summarized in Table 1.

Measures

Demands. Given that social institutions translate social change to the individual level, two central life domains have been selected for analysis. These to domains are work and occupation on the one hand and personal relationship and family on the other. For each of the two life domains six prototypical demands of social change were identified (for details, see Silbereisen et al., 2006). The selection of these demands was based on the results of a theoretical analysis of social change presented in the introduction of this study. Simultaneously, this analysis comprises the theoretical justification for the selection of the demands. The individual demands in the two life domains were formulated as statements including a reference period of five years (“When considering the past five years...”). The assessment thus represents individual appraisals of contextual change withing a standardized reference period. Respondents were asked for their endorsement to the following statements.

In the domain of family and personal relationship the items comprised “... I now have to take more things into account when it comes to decisions concerning the relationship with my partner or family”, “... it is more difficult to decide, given my present life circumstances, whether I want to have a(nother) child or not”, “...the knowledge and experience of my parents now provide less sense of direction in my life”, “... it is more likely the case that I now have to reckon with being or once again becoming financially long-term dependent on my parents”, “... my personal contacts are now less reliable”, “... it is now more likely that my partner could leave me”. In the domain of work and occupation, the occupational status of the respondents had to be taken into account. Depending on whether subjects were gainfully employed, not employed or still in education, they were presented work related demands adopted to their occupational status. The gainfully employed were confronted with the following demands: “... it has become more difficult to plan my career path”, “... today, I have to be prepared more for the possibility of reluctantly only working part-time instead of full-time”, “... the risk of loosing my job has increased”, “... my career plans were more often hindered by unforeseen events and circumstances”, “it is now more likely that I will be forced to accept a job requiring lower qualifications than those I have”, and “... there are currently fewer job opportunities for me”. Subjects not employed were presented the items “... it has become more difficult for me to plan my career path”, “... today, I have to be prepared more for the possibility of reluctantly only finding part-time instead of full-time work”, “... the risk of not finding a new job has increased”, “... my career plans were often hindered by unforeseen events and circumstances”, “... it is now more likely that I will only get a job requiring lower qualifications than those I have”, and “... there are currently fewer job opportunities for me”. Subjects still in education were asked for their endorsement to the items “... it has become more difficult to plan my career path”, “... today, I have to be prepared more for the possibility of reluctantly only working part-time instead of full-time in the future”, “... the risk of not being able to complete my education or vocational training has increased”, “... my career plans were often hindered by unforeseen events and

circumstances", "... it is now more likely that I will later be forced to accept a job requiring lower qualifications than those I have", and "... there are fewer occupational training opportunities for me". Subjects were asked to endorse each demand item on a scale ranging from 1 ("does not apply at all") through 7 ("fully applies"). For the present analyses, work related demand items were considered equivalent for the three occupational groups. Mean endorsement to each single item is presented in Table 2. Further details and validity analyses of the demand measures are presented by Tomasik and Silbereisen (2007). In order to obtain a composite score reflecting the overall concern with demands, all highly endorsed items were counted and summed up. High endorsement was defined as a scale value of 6 or 7. This composite score was used a a selection criterion for identifying the study sample. Its distribution is illustrated in Figure 2.

Opportunity Structures. Indicators for the opportunity structures in the domain of work and family were derived from aggregate data that had to meet certain criteria. First, these indicators had to be available for possibly small regional units. The smaller the geographical units are the more they represent the proximal environment relevant for control striving in the respective life domains. The choice of small scaled geographical units thus increases the relevance of the measures on opportunity structures for individual action. Furthermore, the number of data points available for analysis is also maximized. However, relevant data is usually available only at a limited geographical resolution which points to the second criterion. With smaller regional units the *reliability* of aggregated data decreases, especially if one has to rely on information collected by local institutions. Not only is such data based on smaller samples and thus more prone to sampling errors and outliers, but there are also more practical reasons such as different standards of sampling and aggregation which limit the reliability of the indicators. The third criterion for the modeling of opportunity structures was *parsimony*. The relevant opportunity structures should be constructed with as few indicators as possible. This not only increases the transparency and interpretability of the following analyses but also makes replications in different contexts more feasible. As usual, a

trade off between these three criteria had to be found. In order to ensure a minimum standard for data quality, only nationwide available official census data and semiofficial data from private research institutes was used. This limited the geographical level of analysis to administrative counties ("*Landkreise*") which, however, seemed to be a good compromise between validity and reliability of aggregated data.

It is obvious that there is no single powerful indicator describing the opportunity structures for work or family. In order to obtain measures that are valid for individuals in a wide range of life circumstances, a multidimensional approach is necessary. However, the idea behind using a set of several, moderately correlated indicators is not only that of increasing the validity of such a composite measure but also its reliability. For the domain of work, four indicators were used including (1) the unemployment rate relative to the number of employed, (2) the overall labor force participation of 15 to 65 year olds, (3) the proportion of welfare recipients in the population and (4) the proportion of long-term unemployed in all unemployed. The choice of these indicators was based on a study on the regional prosperity in Germany (Institut der deutschen Wirtschaft, 2007). However, only those indicators that represent opportunity structures on the labor market and are thus highly relevant for the demands in question were selected. All data refers to the years 2005 or 2006, the unemployment rate was computed as the monthly average for October of this year. Note that these indicators do not only affect the opportunity structures for the unemployed but also for gainfully employed subjects and those still in education. For the gainfully employed, unemployment rates and the related indicators do not only define their workplace security but also their power to negotiate loans, wages, and working conditions with employers. For those still in education, these indicators describe the difficulty of a successful transition from school to work.

For the domain of family, too, a multi-faceted index was composed reflecting the aspects of (1) demography, (2) education and labor market, and (3) safety and wealth. The choice of these aspects is inspired by the "*Familienatlas 2005*" (Bucksteeg, Kaiser &

Lehmann, 2006) which was edited by the Federal Ministry for Family, Senior Citizen, Women, and Youth to provide a description of “family friendliness” throughout Germany. It is based on official and semi-official data sources and has a resolution down to the level of administrative counties. The aspect of “demography” is represented by the proportion of children and adolescents under 18 years on the total population in 2002, the total fertility rate in 2000, and the net migration ratio of the 18 to 50 years old in 2000. This age bracket both comprises the majority of the work force and represents the time window for childrearing and family building. It is thus not only the economic power that is strongly correlated with a positive demographic trend in a certain region. Families usually exhibit a strong demand for both public and private infrastructure and are both willing and able to pay for it. Some rural regions in Eastern Germany provide vivid examples of a negative demographic trend. The decreasing public budget in these regions becomes apparent in rising prices for public infrastructure and the cutback of public services including the local public transport. Furthermore, private enterprises withdraw from the regions of declining purchase power which not only results in further unemployment but also decreases the overall quality of life. Regions with a negative demography, however, do not turn over night into areas of high recreational and touristic value. They are often characterized by industrial fallows and high vacancy in houses and flats with related problems of vandalism. “Education and labor market” is the second aspect included in the present index. It was composed of the proportion of high school dropouts in 2001, the average unemployment rate in 2003, the density of open apprenticeship positions in 2001, and the proportion of unemployed adolescents and young adults (under 25 years) on all adolescents and young adults between 15 and 25 years of age in 2002. Although these are primarily economic indicators, indirect effects may be expected for the family life. Research on the negative impact of unemployment and workplace insecurity (e.g., Graham, 1985; Kirby & Luke, 1986; Larson, Wilson & Beley, 1994) has clearly demonstrated such spill-over effects. The third aspect included in the factor representing opportunity structures relates to “safety and wealth”. It is composed of the number of assaults

and burglaries in 2003, the proportion of injured children (under 15 years) in road traffic accidents on all children in that age group, and the proportion of children and adolescents dependent on welfare payments in 2002. This aspect points to the overall living conditions that are particularly relevant for families but also affect the lives of people without children. One could think of more proximal measures for safety and wealth. The advantage of these indicators, though, is that they are highly objective and not particularly discriminating rural or urban areas.

Every single indicator was z-standardized and two indices for regional opportunity structures were computed by summing up the respective indicators. Each indicator was thus incorporated with an equal weight into the respective index. Then the two indices were again z-standardized so that the mean was $M = .00$ ($SD = 1.00$) across all subjects. The scores for each regional unit investigated are presented in Table 3.

Control Strategies. Before getting into the details of the scales' psychometric properties, some notes must be made with regard to the development of the scales. In spite of the clear rationale of the life-span theory of control, past empirical research revealed some open questions concerning the measurement of the control strategies. First, there is no standard instrument for the assessment of primary and secondary control available. Rather, in different research contexts an item pool is generated with regard to the specific research issue (e.g., J. Heckhausen et al., 2001; Tomasik, 2003; Wahl et al., 2004; Wrosch et al., 2000). Adopting a domain-specifically formulated instrument to the needs of the present study was not possible, because the items often describe detailed coping behaviors pertaining to a specific goal or demand (e.g., writing letters of application to get a job). Furthermore, the limited interview time and the vast number of specific ways in which control can manifest did not allow the assessment of control strategies for every particular demand. However, because people do not report completely different patterns of control across different situations, especially if these situations belong to the same domain of life (Nagy, 2001), a demand-specific assessment most likely would not yield many advantages or new

conclusions. A reasonable compromise was to assess control strategies with regard to similar demands that were grouped into life domains. If one decides to assess domain-specific instead of demand-specific control strategies, the assessment, though, needs to be more general and has to avoid descriptions of strategies that are applicable only to a subset of demands in a given domain. Furthermore, if one wants to compare control strategies across different domains and evaluate the degree of domain-specificity, a single instrument is needed that is applicable to a variety of domains and in different contexts. Although, as a consequence of this, control strategies have to be assessed on a very general level, too abstract and too artificial formulations have to be avoided. Second, the hitherto existing assessment instruments are known to have psychometric deficiencies derived from the fact that many control strategies are functionally equivalent rather than complementary in nature. For instance in order to protect one's emotional balance after failure one might blame the circumstances *or* compare with others worse off *or* focus on one's success in other domains of life. Any attempt at assessing functionally equivalent and non-complementary control strategies cannot result in a homogeneous scale. This state of affairs calls for items that emphasize the function rather than the content of a control strategy. Whenever this is not possible or not desirable, non-complementary strategies need to be assessed in *different* scales, which has not been done until now.

The operationalization and the psychometric properties of the scales assessing selective primary, selective secondary, compensatory primary and the two aspects of compensatory secondary control will be described in the following for each scale separately. Although only the two scales for compensatory secondary control were used in the following analyses, all five scales will be described in detail in order to pinpoint the context in which the compensatory secondary scales were assessed. The ordering of the items in the questionnaire is presented in Table 4. All scales were assessed by paper-pencil in the otherwise oral interview and participants were asked for rate their endorsement for each item an a scale ranging from 1 (“does not apply at all”) to 7 (“fully applies”). Note that the entire

set of items has been assessed three times referring to the demands in the domains of work and occupation, intimate relationship and family, and leisure and public life, respectively. Only the scales for the domains of work and occupation as well as intimate relationship and family were used in the following analyzes.

In the initial sample were $N = 126$ (4.4%) cases with missing values on one or more control strategy items. Most of the cases had only one single item missing and the missing values very distributed randomly across persons and items. All missing values have been imputed by the Expectation-Maximization-algorithm prior to the analyses (see Dempster, Laird & Rubin, 1977). This imputation did not notably change the first and second order moments of the items' distributions.

Selective primary control addresses the investment of personal resources such as ability, time, and effort in order to master a demand or to fight difficulties on the way to mastery. This control strategy was measured by the items “I am also prepared to make a big effort in order to find a good solution”, “No trouble is too much for me in handling these changes as long as it's worth my while”, and “I don't hesitate long when it comes to finding a good solution but rather do something towards solving the problem” in each life domain , respectively. An latent measurement model for these items was established and tested against the data. The conceptual model is depicted in Figure 3. Both the covariance and the mean structure was modeled. In order to account for the multi-domain structure of the items, domain and method factors were included into the model. These factors were parametrized in a way that allows their interpretation as *additive causal effects* of the life domain (domain effects) and the single item (method effects; for details, see Steyer, 2005). Following the recommendations of Eid and colleagues (Eid, 2000; Eid, Lischetzke, Nussbeck & Trierweiler, 2003), D-1 domain factors and M-1 method factors were included into the model, where D is the overall number of domains and M the overall number of methods or items. This not only allows that these factors may be correlated, but also ensures the parsimony of the model. The domain of work was chosen as the reference domain and the

first item as the reference method. This choice can be arbitrary for the purposes of the following analyses. Parameter estimates of the measurement model of selective primary control are summarized in Table 5. This model replicated the data structure without a significant deviation ($\chi^2(13) = 16.59$, $p = .22$). Other indicators suggested a very good fit of the model (*RMSEA* = .010; *RMR* = .009; *GFI* = 1.00). For further computations, latent variable scores were computed. Selective primary control for work and occupation is represented as the latent variable score of the latent trait variable; selective primary control for intimate relationship and family was computed as the sum of the latent trait variable and the latent causal effect variable for the respective life domain.

Selective secondary control serves the motivational commitment through enhancement of positive consequences after mastery of the demands and through enhanced appraisal of one's own capacity for control. This strategy inhibits premature disengagement when difficulties arise and was measured by the items “I tell myself time and time again that I can manage it if I only set my mind to it”, “I imagine over and over again how happy I will be when I find a good solution”, and “In order to make progress I avoid everything which could distract my attention”. Again, a latent measurement model was set up and tested against the data. Parameter estimates can be found in Table 6. For selective secondary control, the model could not replicate the data without significant discrepancies ($\chi^2(13) = 31.94$, $p < .01$). Other indicators, though, suggested a very good model fit according to current standards in the field (*RMSEA* = .022; *RMR* = .013; *GFI* = 1.00). Because it is a regular practice to report findings based on such and worse models, the measurement model will be accepted. However, it should be kept in mind that this scale is not measuring a perfectly homogeneous propensity.

If personal resources do not suffice for mastering the respective demands, *compensatory primary control* can be activated. This control strategy comprises seeking help and social support, breaking new ground, and looking for detours and alternative solution. In order to ensure the homogeneity of the scale, only items taping into the recruitment of help

and social support were assessed. The respective items were “If I get stuck then I take advantage of all the help I can get to make headway”, “If I am not making any progress then I ask other people for ways and means of finding a solution”, and “If I get stuck then I weigh up who I could ask for help”. The latent measurement model set up fit the data well ($\chi^2(13) = 15.70$, $p = .27$; *RMSEA* = .008; *RMR* = .009; *GFI* = 1.00) and was thus accepted. Parameter estimates are summarized in Table 7.

As indicated above, *compensatory secondary control* was assessed with two independent scales. The first scale focused on the function of compensatory secondary control to protect motivational and emotional resources of the individual in case of (temporary or finally) failure. The scale measuring this self-protective compensatory secondary control comprises the items “If I can't handle these changes then I search for grounds not to have to give myself the blame”, “If I can't find a solution then I search for explanations which enable me to justify myself in my own mind”, and “If I don't manage to find a good solution whatsoever then I search for plausible reasons why I am not at fault”. The parameter estimates of the latent measurement, which fit the data well ($\chi^2(13) = 18.75$, $p = .13$; *RMSEA* = .012; *RMR* = .009; *GFI* = .1.00), are presented in Table 8.

If the mastery of demands is no longer feasible strategies of compensatory secondary control that ease disengagement become important. The items that were used to assess these strategy are “If I can't find a solution then I put the problem to the back of my mind”, “If nothing works out then I no longer take the whole thing seriously”, and “If I can't handle these changes at all then I don't concern myself with them any longer”. Note that the focus of these items is quite different from the former one. This model fit the data very well, both in terms of the discrepancy measure ($\chi^2(13) = 17.48$, $p = .18$) and other fit indices (*RMSEA* = . 011; *RMR* = .011; *GFI* = 1.00). The parameter estimates for the second scale of compensatory secondary control are presented in Table 9.

Dispositional optimism. Optimism is a generalized outcome expectancy that is believed to maintain focus and effort (Carver & Scheier, 1981). As opposed to situational

optimism, it is regarded a stable personality disposition. Four positively formulated items from the Life Orientation Test (LOT; Scheier & Carver, 1985) were assessed: “I am always optimistic about my future “, “In uncertain times, I usually expect the best”, “I always look on the bright side of things”, and “I'm a believer in the idea that 'every cloud has a silver lining'”. Respondents indicated their degree of agreement on a scale ranging from 1 (“does not apply at all”) to 7 (“fully applies”). The selection of the positively formulated items was motivated by the controversial discussion on the factorial structure of optimism and pessimism (Marshall et al., 1992; Plomin et al., 1992; Robinson-Whelen, Kim, MacCallum & Kiecolt-Glaser, 1997). A congeneric measurement model for optimism was tested by the means of confirmatory factor analysis. Although the discrepancy measure of $\chi^2(2) = 12.71$ was significant ($p < .01$), other fit indices suggested a reasonable model fit (*RMSEA* = .044; *RMR* = .014; *GFI* = 1.00). Standardized factor loading were $\lambda_1 = .72$, $\lambda_2 = .41$, $\lambda_3 = .78$, and $\lambda_4 = .60$, respectively.

Alternative involvement (also referred to as civic engagement) was measured with the item “I belong to a club, a church fellowship or an initiative where I can make a contribution or where I am needed”. This single item measure is part of a questionnaire measuring external developmental assets (see Scales et al., 2000) and goes beyond a formal membership in an organization. Rather, an active participation and involvement in the civic domain is measured. Respondents were asked to indicate how much this item applied to them on a scale ranging from 1 (“does not apply at all”) to 7 (“fully applies”). Additionally, they were allowed to state that this item was “not applicable” to them because of the lacking of a formal membership in an organization. About 52% of all respondents reported that this item either “does not apply at all” or that it is “not applicable”. Consequently, the distribution of this variable was highly skewed.

Satisfaction with life was measured with regard to life in general as well as with regard to work and family situation. Respondents were asked “How satisfied are you at present with your life altogether”, “How satisfied are you with life in your family?”, and

"How satisfied are you with your work, education or training?". They could answer on a scale ranging from 1 ("very dissatisfied") to 7 ("very satisfied"). Single item measures of life satisfaction are quite common and proved sufficiently reliable and valid measures of the underlying construct (Campbell, Converse & Rodgers, 1976). Satisfaction with life is one important aspect of subjective well-being and represents its cognitive and evaluative dimension (Diener, 1984; Pavot & Diener, 1993). Although there is some support for the idea that there are stable inter-individual differences in satisfaction with life throughout the life span (Fujita & Diener, 2005) so that "some individuals seem to be happy people, some unhappy people" (p. 79), the same authors notice that the measure is sensitive to current situational factors. Life satisfaction is influenced by daily uplifts and hassles (Emmons, 1991; Kozma et al., 1990), and, more severely, by chronic strain (Krause, Jay & Liang, 1991) and by critical life events (Stallings et al., 1997). There is also some support that life satisfaction reflects – at least to some extent – current societal living conditions as well as the ability to change them to the better in terms of access to power (Tesch-Römer, Motel-Klingebiel & Tomasik, in press). Furthermore, there is evidence that satisfaction with life depends on the specific goals and strivings of an individual (Oishi, Diener, Suh & Lucas, 1999) and that satisfaction with life can be "regulated" by primary and secondary control processes as part of the goal striving (and goal disengagement) process (J. Heckhausen & Schulz, 1998). It is thus a promising and interesting variable for the current investigation.

Study Sample

Self-protection and disengagement as control strategies are only meaningful against the backdrop of demands that require an adaptive response. For individuals who experience few or even no demands the hypotheses formulated here are not very relevant. Furthermore, one can expect these control strategies to become more momentous with an increasing load of demands the individual is confronted with. With a very high load of demands, the urgency of applying compensatory secondary control strategies under unfavorable opportunity structures is particularly pronounced. These two premises needed to be considered in the analyses.

There are basically two ways to account for the different functionality of compensatory secondary control as a function of the different load of demands each individual experiences. First, the load of demands may be considered as a control variable in the analyses. Preferably, one would compute statistical interactions with this variable and expect that the hypothesized relationships are particularly strong when the load of demands is high. Although this approach is conceptually sound, its major disadvantage is the high complexity of statistical models which makes them difficult to interpret and communicate. For the present hypotheses one would need to compute and interpret interaction terms up to the fourth order. The second approach, which was chosen here, is to focus only on those individuals who experienced a very high load of demands. This approach circumvents the problem of additional statistical complexity, but bears some other disadvantages. First of all, this kind of analysis restricts the generalizability of the results to a restricted sample of “extreme” individuals. Here, however, the restriction of the sample is admissible because the population of interest are highly demanded individuals for which self-regulation is particularly relevant. Furthermore, it is usually difficult to define a meaningful cut-off value based on theoretical criteria. Which load of demands is required to make self-protection and disengagement is not known and certainly also depends on various other factors. This problem was addressed by reverting to power analysis in order to ensure that the deliberate definition of an cut-off value makes sense at least from an methodological perspective.

The decision for the optimal size of the study sample was guided by a trade-off between internal validity and statistical power. The research questions to be investigated here required that individuals report a preferably large number of demands. However, because interaction hypotheses are going to be tested, the nominal effect sizes were expected to be small (see Dalbert & Schmitt, 1986) so that the sample size investigated needed to be sufficiently large. Therefore, a compromise needed to be found. The cut-off value for defining the study sample was set to six highly endorsed demands out of twelve possible. Thus, only subjects who have endorsed at least every second demand to a high degree were

selected. This cut-off criterion resulted in an effective sample size of n_{eff} = 806 subjects which is about 28% of the initial sample. For this sample size, the power to detect small effects (f^2 = .02) at an alpha error level of α = .05 is (1-β) = .98, which is very high. Thus, the selected sample size seems to be a reasonable compromise between the need for the selection of highly demanded individuals and substantial statistical power.

The descriptive statistics of the study sample are presented on the right-hand side of Table 1 and compared to the characteristics of the initial sample. Some important differences became apparent. For statistically testing these differences, the study sample of N = 806 was compared with those of the N = 2057 subjects that were excluded from the analyses. The effects were tested on an α = .05 error level. With a mean age of M = 31.65 (SD = 8.20) the study sample was on the average approximately eights months older than the group of excluded subjects (M = 31.07, SD = 8.85; F(1, 2861) = 2.61). This effect, though, was not statistically significant (p = .11). There was also no statistically significant difference in the proportion of males and females between the two samples (χ^2(1) = 3.13, p = .08). However, a substantial selectivity effect was found with the level of education (χ^2(2) = 74.42, p < .05; φ = .16). The study sample comprised fewer subjects with college-bound (z = -6.26) but more subjects with high-school education (z = 2.98) and more subjects with only compulsory schooling (z = 2.32). Some differences were also found with respect to the marital status (χ^2(3) = 12.72, p < .05; φ = .07). The analysis of standardized residuals indicated that the significant χ^2-statistic resulted from more divorced (z = 2.85) subjects in the study sample than expected. On the average, participants in the study sample also reported having more children (M = 1.01, SD = 1.11) than those excluded (M = .77, SD = 1.02; F(1, 2861) = 30.11, p < .05; η^2 = .010) and this difference did not substantially change when controlling for age (F(1, 2860) = 29.80, p < .05; η^2 = .010). Particularly pronounced selectivity effects were found for the employment status (χ^2(3) = 213.87, p < .05; φ = .27). The study sample comprised fewer gainfully employed (z = -3.84) and fewer students (z = -4.37) as opposed to strikingly more unemployed (z = 10.89). The regional composition, too, differed between the

study sample and those excluded ($\chi^2(3) = .34$, $p = .95$; $\varphi = .15$): There were more subjects from the Eastern (Mecklenburg-Western Pomerania: $z = 3.17$; Thuringia: $z = 3.50$) then from the Western federal states (Schleswig-Holstein: $z = -2.23$; Baden-Wurttemberg: $z = -4.29$). Finally, the size of the community where the subjects were living differed significantly ($\chi^2(2) = 11.20$, $p < .05$; $\varphi = .06$). The study sample comprised fewer subjects from communities with more than 100,000 inhabitants ($z = -2.53$). In order to study the selectivity effects in a multivariate fashion, a logistic regression model for the prediction of membership in the study sample was set up. All variables that showed significant bivariate relationships were entered simultaneously. Table 10 presents the estimated parameters of the logistic regression model. Although one could think of better parameterizations of this model, it nevertheless suffices for drawing the conclusion that it is primarily the employment status followed by the level of education and federal state of origin that had a strong selection effect. Controlled for these three variables, the other variables lost their predictive power. Summarizing the results for the socio-demographic variables one can state that the study sample comprised more subjects in a difficult and precarious occupational and presumably financial situation and those with a rather low level of education. The effects reported above reflect the selection process which aimed at the identification of highly demanded individuals. These individuals were *not* expected to be randomly distributed in the population so that the results obtained perfectly make sense. One should, however, bear in mind that although the sample is biased towards unemployment and lower education, these variables a far from being deterministic for the sample selection. In the multivariate logistic regression model, the $R^2 = .10$ according to Cox and Snell. This indicates still enough variance in the socio-demographic characteristics of the study sample.

More relevant for the interpretation and generalizability of the following results are selection effects on the theoretically interesting variables of this study, namely control strategies, measures of subjective well-being, optimism, and civic engagement. Means and standard deviations of these measures are presented in Table 11. All but one control strategy

significantly differs between the selected and excluded samples. The study sample had higher endorsement of selective primary control for work ($F(1, 2861) = 51.31$, $p < .05$; $\eta^2 = .018$) and family ($F(1, 2861) = 58.85$, $p < .05$; $\eta^2 = .020$), selective secondary control for work ($F(1, 2861) = 58.81$, $p < .05$; $\eta^2 = .020$) and family ($F(1, 2861) = 58.62$; $p < .05$; $\eta^2 = .020$), more compensatory primary control for work ($F(1, 2861) = 93.76$, $p < .05$; $\eta^2 = .032$) and family ($F(1, 2861) = 77.77$, $p < .05$; $\eta^2 = .026$). Endorsement of self-protective compensatory secondary control for work ($F(1, 2861) = 22.76$, $p < .05$; $\eta^2 = .008$) and family ($F(1, 2861) = 12.28$, $p < .05$; $\eta^2 = .004$) was lower in the study sample. No significant differences existed for disengaging compensatory secondary control for work ($F(1, 2861) = .40$, $p = .53$) and family ($F(1, 2861) = .61$, $p = .43$). Because subjects in the study sample were confronted with more demands, it does not surprise that they report more problem-oriented and less self-protective control strategies than the excluded subjects. This finding emphasizes the normative character of the demands under investigation. The non-significant effect for disengagement is more difficult to interpret. It might be that among those excluded there were many who actually had already disengaged from the demands and thus no longer reported them anymore. Because this idea cannot be tested with the available cross-sectional data it has to remain highly speculative. A remarkable effect can also be reported for the variance of the compensatory control strategy. The variance of these strategies was increased in the study sample. This means that the inter-individual variability in the compensatory response to demands increases when people are confronted with them. This is a plausible finding that supports the reliability of the data.

Looking at the supposed moderators, only alternative involvement significantly differed between the selected and excluded subjects ($F(1, 2861) = 27.47$, $p < .05$; $\eta^2 = .010$). The subsample of highly demanded individuals was less prone to engage in alternative social activities. Dispositional optimism, however, did not significantly differ between the samples ($F(1, 2861) = .59$, $p = .44$). This is an important result suggesting that those who perceived and thus reported many high demands did not so because of some pessimistic attitude.

However, facing many high demands of social change seems to affect subjective well-being as measured by the general and domain-specific satisfaction with life. General satisfaction with life ($F(1, 2861) = 180.15$, $p < .05$; $\eta^2 = .059$) and satisfaction with work or training ($F(1, 2861) = 184.79$, $p < .05$; $\eta^2 = .061$) were substantially lower, whereas the effect for satisfaction with family life was only marginally albeit significantly lower ($F(1, 2861) = 4.60$, $p < .05$; $\eta^2 = .002$). This finding is an indirect validation of the study sample selection. It suggests that the cut-off chosen indeed filters out those subjects who are highly burdened by demands of social change.

Note that of all 92 counties from which the initial sample was drawn, ten regions were not represented in the analyses, because not even one subject living there met the criteria for being highly demanded. The excluded regions were Heidenheim, Freudenstadt, Breisgau-Hochschwarzwald, Ortenaukreis, Rottweil, Tuttlingen, Waldshut, Biberach, Bodenseekreis, and Ravensburg. These counties are all located in Baden-Wurttemberg and feature opportunity structures of about one standard deviation above the average.

Results

Hypothesis 1

General procedure. All calculations were conducted with the open source statistical programming language GNU R (R Development Core Team, 2006). Full maximum likelihood has been used as the optimization algorithm for fitting the model parameters to the data. All variables were centered at the grand mean and standardized prior to the computations. In order to account for the grouped structure of the data, a set of mixed-effects models (H. Goldstein, 1995; Pinheiro & Bates, 2000) was computed using the *nlme*-library by Pinheiro, Bates, DebRoy and Sarkar (2006). Similar models have become known in the research literature under different names such as “random coefficient model” (De Leeuw & Kreft, 1986; Longford, 1993), “hierarchical linear model” (Bryk & Raudenbush, 1992), or “variance component model” (Searle, Casella & McCulloch, 2006). Sometimes the term “multilevel model” (H. Goldstein, 1995) is used to indicate that data on different aggregate

levels is analyzed. A modeling approach based on classical techniques was not appropriate for (at least) two reasons. First, grouped data is characterized by the presence of a correlation between observations within the same group and therefore violates the assumption of independence of observations (see H. Goldstein, 1995). Second, classical techniques do not provide the possibility to use the appropriate number of degrees of freedom in the analyses. Usually, the total number of observations is used not taking into account that aggregate data is available for a (much) smaller sample of observational units. The failure of using the right number of degrees of freedom results in a strong bias of the test statistic in favor of the alternative hypothesis.

The mixed-effects modeling technique provides a convenient toolbox for analyzing grouped data. It is widely used, for instance, in the educational domain where students as the observational units of main interest are grouped within classes and schools. The same grouped structure applies to the present data set where individuals are grouped within regions. One can expect that a certain amount of variability in the dependent variable is accounted for by the grouping of the subjects. This amount of variance is referred to as the intra-class correlation.

Modeling was performed in a systematic and sequential manner, providing information at each step of analysis. Although Hypothesis 1 was tested for two different life domains and three different response variables, the modeling approach was always the same. For the sake of clarity, the mathematical procedure will be described here once and then subsequently applied to the different response variables and the different life domains. Hence, the next paragraphs present an general overview of all the procedure together with a detailed description of what parameters are calculated and what can be learned from them.

All analyses started with the formulation of the null model M_0. One has to distinguish between a fixed and a random part in this (and all following) mixed-effect model. The fixed part of the null model – which is sometimes also called the intercept-only model – was defined as:

$$Y_{ij} = \beta_{oj} + e_{ij} \quad (1)$$

The notation used here is adopted from Hox (2002), where Y_{ij} refers to the dependent or response variable which is life satisfaction here. The subscript *j* is for the different regions (j = 1 .. J) and the subscript *i* for individual subjects (i = 1 .. I) within that regions. In this regression equation β_{0j} is the usual regression intercept with the important difference that it is allowed to vary across the different regions. The intercept is thus considered a random variable and defined as

$$\beta_{0j} = \gamma_{00} + u_{0j} \quad (2)$$

The error terms e_{ij} in equation (1) and u_{0j} in equation (2) are assumed to have a mean of zero and to be uncorrelated with each other and with the other terms in the regression equation. Beyond a baseline estimation of the deviance measures (McCullagh & Nelder, 1989), the null model provides an estimation of the intra-class correlation coefficient which is defined as

$$\rho = \frac{\sigma^2_{u0}}{\sigma^2_{u0} + \sigma^2_e} \quad (3)$$

where σ^2_{u0} is the variance of the individual level errors u_{0j} in equation (2) and σ^2_e is the variance of e_{ij} in equation (1). The intra-class correlation coefficient thus states the proportion of group level variance to the total variance *in the population*. Higher intra-class correlation coefficients indicate stronger effects of the grouping structure in the data, e.g. through common cultural sets or other systematic response bias within the groups.

In a next step, the null model was extended to model M_1 by adding a control strategy variable *X* as a (fixed) predictor in the regression equation. Equation (1) is thus extended to

$$Y_{ij} = \beta_{oj} + \beta_1 X_{ij} + e_{ij} \quad (4).$$

This equation offers an estimation of the effect of X (i.e. control strategy,) on Y (i.e. life satisfaction) across all regions.

In the next model M_2 it was assumed that the slope for X is a random variable that varies between the different regions. The regression coefficient β_1 is written as β_{1j} to indicate that the correlation between control strategy and life satisfaction may vary:

$$Y_{ij} = \beta_{oj} + \beta_{1j} X_{ij} + e_{ij} \quad (5).$$

The random variable β_{1j} is then decomposed into

$$\beta_{1j} = \gamma_{10} + u_{1j} \quad (6).$$

By testing the improvement in model fit between M_2 and M_1 one can assess whether the variance component of the slope is significantly different from zero. Although this is not a necessary prerequisite for testing the interactions, significant variance in the slope suggests that there is substantial variation in the correlation between the respective variables.

The next step is to introduce the higher-order predictors *Z*. The opportunity structure is such a higher-order predictor, because it is not measured on the level of the individual but rather on the level of regions. In model M_3, the main effect of the opportunity structure was added to the regression equation by extending equation (2). By defining the intercept β_{0j} as

$$\beta_{0j} = \gamma_{00} + \gamma_{01} Z_j + u_{0j} \quad (7)$$

and testing the improvement in model fit between M_3 and M_2 one can tell whether opportunity structures (*Z*) have a significant effect on life satisfaction. The core question of Hypothesis 1, though, is addressed in the next model M_4. Equation (6) is extended so that

$$\beta_{1j} = \gamma_{10} + \gamma_{11} Z_j + u_{1j} \quad (8)$$

and thus the slope is allowed to differ between the different regions conditional on the value on the higher-order predictor *Z*. Rewriting equations (5), (7) and (8) yields

$$Y_{ij} = \gamma_{00} + \gamma_{10} X_{ij} + \gamma_{01} Z_j + \gamma_{11} X_{ij} Z_j + u_{10} X_{ij} + u_{0j} + e_{ij} \quad (9)$$

where one can more easily see the interaction term. If γ_{11} is significantly different from zero, we can assume a cross-level interaction between X (i.e. control strategy) and Z (i.e. opportunity structures). Because Hypothesis 1 is directional, the statistical significance of this parameter can (and should) be tested one-tailed. Likewise, the model comparison likelihood ratio tests are adjusted.

In a last step, which is no longer directly related to the hypothesis testing, an individual-level control variable was entered into the equation. Although the subjects in the study sample were selected with regard to their high level of reported demands, there was still

variance in this variable. Thus, the number of highly endorsed demands in the respective life domain was entered as a control variable. It was expected that the results concerning the cross-level interaction remain stable after controlling for this variable.

Intra-class correlation of the response variables. The respective Models M_0 allow the estimation of the intra-class correlation in the population for each response variable. The coefficients were $\rho = .09$ for general life satisfaction, $\rho = .10$ for satisfaction with work, and $\rho = .05$ for satisfaction with family life. Thus, only 10% or less of the variance could be explained by the group level. From another point of view, there was enough individual variation to be explained.

Results for self-protection (CSC I) in the work domain. The first response variable to be investigated was general life satisfaction. Models were setup as described above and a comparison of the different models is presented in Table 12. Comparing Model M_2 with M_1 revealed that there was indeed variation in the correlation between self-protection and general life satisfaction; the likelihood ratio test was highly significant. However, neither the main effect of opportunity structures (M_3 vs. M_2) nor the cross-level interaction (M_4 vs. M_3) were significant. We had to abandon the hypothesis that the correlation between self-protection and general life satisfaction varies as a function of the opportunity structure. There was, however, some not yet explained variation.

Findings were different when satisfaction with work was analyzed as the response variable. The results of the model comparison are presented in Table 13. Statistically, there was no variation in the correlation between self-protection and satisfaction with work, i.e. the effect can be assumed to be fixed. The main effect of the opportunity structure was not significant. However, there was a significant cross-level interaction between self-protection and opportunity structure. The coefficients of this model are presented in Table 14. As expected, there was a negative coefficient for the interaction term ($\beta = -.09$; *S.E.* = .04; $p < .05$): Higher self-protection was correlated with higher satisfaction with work only under unfavorable opportunity structures and vice versa. This model is depicted in Figure 4. This

and the following figures are so-called condition plots that show the relationship between two variables as a function of a third one. The conditional variable represents the opportunity structures and was split in three intervals that approximately comprised the same number of subjects. Under unfavorable conditions (left panel in Figure 4) higher self-protection was associated with higher satisfaction. Individuals who employed more strategies of self-protection in the domain of work were thus more satisfied with it, if (and only if) the opportunity structures were unfavorable. Exactly the opposite was true for self-protection under average (center panel in Figure 4) and favorable opportunity structures (right panel in Figure 4). This finding fully supported Hypothesis 1 and remained stable even after controlling for the number of highly demands in a last step. The interaction coefficient in model M_5 ($\beta = -.08$; *S.E.* = .04; $p < .05$) did not change substantially.

A quite similar pictures emerged after the investigation of transfer effects between self-protection in the work domain and satisfaction with family life. Model comparison is presented in Table 15. There was significant variation in the correlation between self-protection for work demands and satisfaction with family life. Interestingly, the main effect of work related opportunity structures on satisfaction with family was significant, as the comparison between models M_3 and M_2 shows. The relationship in model M_3 was negative and the respective regression coefficient was $\beta = -.14$ (*S.E.* = .04; $p < .05$) which means that in regions with favorable work related opportunity structures satisfaction with family life was on the average *lower*. The crucial model comparison between M_4 and M_3 turned out significant. The coefficients of model M_4 are presented in Table 16. Again, there was a negative coefficient for the interaction term ($\beta = -.09$; *S.E.* = .05; $p < .05$). The conditional plot for this model is presented in Figure 5. Although the slope was not that steep as for satisfaction with work, the overall finding is the same. The correlation between self-protection and satisfaction with family was only positive under unfavorable conditions. When opportunity structures were not unfavorable, the correlation was negative. Again, the interaction coefficient did hardly change after controlling for the number of highly endorsed

demands in model M_5 (β = -.09; *S.E.* = .05; $p < .05$).

Summarizing the results for self-protection in the work domain, the hypothesized interactions were significant for the domain-specific measures of satisfaction with life but not for the general assessment of life satisfaction. There were thus both within-domain and between-domain effects. Figures 4 and 5 suggest that the positive correlation between self-protection and satisfaction with work resp. family was specific for the particularly unfavorable opportunity structures. Controlling for the number of highly endorsed demands did not alter the overall findings.

Results for self-protection (CSC I) in the family domain. After having investigated the functional relationship between self-protection in the work domain and satisfaction with life under varying work-related opportunity conditions, self-protection in the domain of family was analyzed. Again, the first response variable to be investigated was satisfaction with life in general. Model comparisons for this response variable are presented in Table 17. Comparing M_2 and M_1 yielded the conclusion that there was significant variation in the slopes of self-protection between the different regions. However, family related opportunity structures in average did not have a significant main effect on satisfaction with life, as the comparison between M_3 and M_2 suggests. However, the comparison between M_4 and M_3 showed a significant interaction term. The interaction coefficient was negative (β = -.07; *S.E.* = .04; $p < .05$) as presented in Table 18. Model M_4 is graphically depicted in Figure 6. Under unfavorable opportunity structures, the relationship between self-protection and general satisfaction with life was substantially positive, whereas exactly the opposite was the case under average and favorable opportunities. Even after controlling for the number of highly endorsed demands in model M_5 the interaction coefficient remained stable (β = -.07; *S.E.* = .04; $p < .05$).

The next analysis investigated satisfaction with work as the response variable. Note, that since family related demands, self-protection in the family domain and family related opportunity structures were the predictor variables, satisfaction with work was a cross-

domain outcome which allowed the investigation of transfer effects. As the comparison between models M_4 and M_3 presented in Table 19 suggests, there was no significant variation in the slope of self-protection in the family domain. Neither was there a significant main effect of family-related opportunity structures (M_4 vs. M_3). However, the interaction term was significantly negative ($\beta = -.09$; *S.E.* = .04; $p < .05$) as can be seen in Table 20. This model is presented in Figure 7. Again, there was a positive relationship between self-protection and life satisfaction only under unfavorable opportunity structures. This interaction effect dropped a little after controlling for the number of highly endorsed family demands, but still remained significant ($\beta = -.06$; *S.E.* = .04; $p < .05$).

Turning to the effects of self-protection in family on satisfaction with family life, there were even stronger effects. Model comparisons are presented in Table 21. There was significant variation in the slope of self-protection between the different regions (M_2 vs. M_1), but the main effect of family related opportunity structures on satisfaction with family life was not significant (M_3 vs. M_2). However, as the comparison between M_4 and M_3 shows, the interaction effect was. The coefficients of model M_4 are presented in Table 22: As compared to other predictor-outcome-combinations, the interaction term coefficient was quite large ($\beta = -.12$; *S.E.* = .05; $p < .05$). However, as becomes obvious in Figure 7, the interaction term can rather be attributed to the negative correlation between self-protection and satisfaction with family life under highly favorable conditions. Nevertheless, the effect was also substantial under unfavorable conditions. It also remained stable after controlling for the number of highly endorsed demands in model M_5 ($\beta = -.12$; *S.E.* = .05; $p < .05$).

Summarizing the findings for self-protection in the family domain, Hypothesis 1 was fully supported. Under conditions unfavorable for families, individuals who endorsed self-protective strategies to a greater extent did also report higher satisfaction with life in general, higher satisfaction with their family life, and also higher satisfaction with work. The last effect can be interpreted as a transfer effect between family and work domains. As one would expect, the transfer effect was numerically not as large as the direct effect. All interaction

effects remained stable after controlling for the number of highly endorsed demands.

Results for disengagement (CSC II) in the work domain. After having investigated Hypothesis 1 for the compensatory secondary control strategy of self-protection, the analyses turned to disengagement and start in the domain of work. The first response variable to be investigated was satisfaction with life in general. The model comparison for this response variable is presented in Table 23. There was significant variation in the correlation between disengagement from work demands and satisfaction with life (M_2 vs. M_1). Model comparison between (M_3 vs. M_2) shows that there was no significant main effect of the opportunity structures on satisfaction with life. The crucial interaction term, though, was significantly negative (β = -.09; *S.E.* = .04; $p < .05$) as both the model comparison between M_4 and M_3 and the model coefficients presented in Table 24 show. The interaction is illustrated in Figure 9. Under unfavorable opportunity structures, disengagement and satisfaction with life were positively correlated, whereas both under average and under favorable opportunity structures the correlation was unequivocally negative. The interaction coefficient did not change when controlling for the number of highly endorsed work demands (β = -.09; *S.E.* = .04; $p < .05$).

Another conclusion needs to be drawn when investigating satisfaction with work as the response variable. Neither the slope for disengagement (M_2 vs. M_1), the main effect of opportunity structures (M_3 vs. M_2), nor the interaction term between disengagement and opportunity structures (M_4 vs. M_3) were significant. The model comparisons are presented in Table 25.

Similarly negative findings were obtained for satisfaction with the family situation as a function of disengagement from work demands and work related opportunity structures. Again, the slope for disengagement was not significant (M_2 vs. M_1) as presented in Table 26. There was a significant main effect of opportunity structures (M_3 vs. M_2), but the interaction term between disengagement and opportunity structures (M_4 vs. M_3) was not significantly different from zero.

Hence, disengagement in the work domain did only interact significantly with work

related opportunity structures when general life satisfaction was considered as the response variable. There were, though, no comparable interaction effects for the domain-specific measures of life satisfaction. Disengagement under favorable and unfavorable conditions did only have a differential functionality when individuals considered an overall evaluation of their lives. In other words, there were neither direct nor transfer effects on domain-specific satisfaction.

Results for disengagement (CSC II) in the family domain. Finally, the correlation between disengagement from family related demands, family related opportunity structures and measures of life satisfaction was investigated. The three analyses yielded results comparable to those for disengagement in the work domain presented in the last paragraphs. For general life satisfaction, model comparisons are presented in Table 27. There was significant variation in the slope of disengagement across the different regions (M_2 vs. M_1). Although there was no significant main effect of the work related opportunity structure (M_3 vs. M_2), the cross-level interaction term between disengagement and opportunities was significantly negative (β = -.08; *S.E.* = .04; $p < .05$). This and all other coefficients of model M_4 are presented in Table 28. The interaction itself is depicted in Figure 10. There was a positive correlation between disengagement and satisfaction with life under explicitly unfavorable conditions which turned negative when opportunity structures improved. The interaction term did hardly change when controlled for the number of highly endorsed demands in the domain of work (β = -.08; *S.E.* = .04; $p < .05$).

Investigating satisfaction with work as the response variable, neither the slope for disengagement (M_2 vs. M_1), the main effect of opportunity structures (M_3 vs. M_2), nor the interaction term between disengagement and opportunity structures (M_4 vs. M_3) were significant. All model comparisons are presented in Table 29.

Similar findings were obtained for satisfaction with the family situation as the response variable. The slope for disengagement was not significant (M_2 vs. M_1) as presented in Table 30. There was a significant main effect of opportunities (M_3 vs. M_2), but the crucial

interaction term between disengagement and opportunities (M_4 vs. M_3) was not significantly different from zero.

The conclusions that can be drawn for disengagement from family related demands correspond to those for disengagement in the work domain. The expected interaction became only significant when general life satisfaction was considered as the response variable. No interaction between disengagement and opportunity structures was present when domain-specific measures of life satisfaction are observed.

Hypothesis 2

General procedure. This research questions investigates the role of optimism under the conditions of favorable and unfavorable opportunity structures. As introduced above in more detail, the approach is twofold. First, the twelve sets of models investigated for Hypothesis 1 are extended with optimism as another predictor and the respective interaction terms (Hypothesis 2a). Technically, another predictor was added in equation (5), so that

$$Y_{ij} = \beta_{oj} + \beta_{1j} X_{1ij} + \beta_{2j} X_{2ij} + e_{ij} \quad (10).$$

Similarly to the procedure described above when introducing equation (6), the new random variable β_{2j} is then defined as

$$\beta_{2j} = \gamma_{20} + u_{2j} \quad (11).$$

By testing the improvement in model fit between a fixed β_2 and random β_{2j} one can assess whether the variance components of the slope are significantly different from zero. In a next step, equation (11) was extended by the introduction of a cross-level interaction term, so that now

$$\beta_{2j} = \gamma_{20} + \gamma_{21} Z_j + u_{2j} \quad (12)$$

and thus the slope is allowed to differ between the different regions conditional on the value on the higher-order predictor *Z*. Combing equation (9) with the additional predictor finally yields

$$Y_{ij} = \gamma_{00} + \gamma_{10} X_{1ij} + \gamma_{20} X_{2ij} + \gamma_{01} Z_j + \gamma_{11} X_{1ij} Z_j + \gamma_{21} X_{2ij} Z_j + \gamma_{(12)1} X_{1ij} X_{2ij} Z_j$$

$$+u_{10}X_{1ij}+u_{20}X_{2ij}+u_{0j}+e_{ij} \quad (13)$$

where one can more easily see the interaction term. For testing Hypothesis 2a it was particularly interesting whether $\gamma_{(12)1}$ is significantly different from zero and negative. Because only this one coefficient is relevant for testing Hypothesis 2a, a step-by-step model comparison introducing each main and interaction effect separately may be skipped for the sake of a clear presentation of the results. Thus, it only will be presented whether there was a significant variance component in the slope of optimism and whether the three-way interaction between opportunity structures, control strategy, and optimism was significant and negative.

In the second approach, introduced as Hypothesis 2b, the control strategies were considered as response variables, which required a new set of models. However, the modeling approach was pretty much the same. Again, analyses started with the formulation of the null model M_0. Its fixed part is defined as

$$Y_{ij}=\beta_{oj}+e_{ij} \quad (14)$$

where Y_{ij} refers to the response variable which now is one of the four control strategies, namely self-protection in the domain of work or family and disengagement in one of the two domains of life. The intercept is allowed to vary across the different regions and thus considered a random variable which is defined as

$$\beta_{0j}=\gamma_{00}+u_{0j} \quad (15)$$

The assumptions concerning the error terms e_{ij} in equation (14) and u_{0j} in equation (15) correspond to that for equation (1) and (2). Again, the null model provides an estimation of the intra-class correlation coefficient as defined in equation (3). In a next step, the null model needs to be extended by adding optimism as the (fixed) predictor variable *X* in the regression equation. Equation (14) thus extends to

$$Y_{ij}=\beta_{oj}+\beta_1 X_{ij}+e_{ij} \quad (16).$$

which yields an estimation of the effect of X (i.e., optimism) on Y (i.e., one of the control strategies) across all regions. In the next model it is assumed that the slope for X is a random

variable that varies so that β_1 is written as β_{1j}:

$$Y_{ij} = \beta_{oj} + \beta_{1j} X_{ij} + e_{ij} \quad (17).$$

The random variable β_{1j} is then decomposed into

$$\beta_{1j} = \gamma_{10} + u_{1j} \quad (18).$$

The final step is to introduce the higher-order predictor *Z* (i.e., opportunity structures) by defining the intercept β_{0j} as

$$\beta_{0j} = \gamma_{00} + \gamma_{01} Z_j + u_{0j} \quad (19)$$

and the slope of X_i as

$$\beta_{1j} = \gamma_{10} + \gamma_{11} Z_j + u_{1j} \quad (20).$$

Equations (16), (19) and (20) can be rewritten and yield

$$Y_{ij} = \gamma_{00} + \gamma_{10} X_{ij} + \gamma_{01} Z_j + \gamma_{11} X_{ij} Z_j + u_{10} X_{ij} + u_{0j} + e_{ij} \quad (21)$$

which, except for the fact that the predictors and the response variable do now have a different meaning, is exactly the same as equation (9). From a γ_{11} significantly different from zero we can conclude a cross-level interaction between X (i.e., optimism) and Z (i.e. opportunity structures). Since Hypothesis 2b was not directional in the sense Hypothesis 1 was, the γ_{11} parameter needed to be tested two-tailed.

Testing variance components of optimism. Prior to the main analyses, the improvement of fit between models with a fixed β_2 and random β_{2j} was tested for all three response variables. The likelihood ratios suggested to include optimism as a random variable for general life satisfaction (Δ-*2LL* = 62.86, *df* = 3, $p < .01$), satisfaction with work (Δ-*2LL* = 27.24, *df* = 3, $p < .01$) and satisfaction with family life (Δ-*2LL* = 65.27, *df* = 3, $p < .01$).

Intra-class correlation for the response variables. Intra-class correlation coefficients for the the variables measuring satisfaction with life were presented above. They did not change since the null models did not either. Not yet reported were the intraclass correlations for the control strategies. The amount of variance that is attributable to the grouping structure was $\rho = .15$ for self-protection regarding work-related demands, $\rho = .13$ for self-protection in the family domain, $\rho = .17$ for disengagement from work-related demands, and $\rho = .20$ for

disengagement from family-related demands. In particular, the coefficients for disengagement were quite substantial. Up to one fifth of the total variance in disengagement from demands of social change could be explained by the regional grouping of individuals.

Results for self-protection (CSC I) in the work domain. Both for general life satisfaction (see Table 31) and satisfaction with work (see Table 32), the three-way interaction terms between opportunity structures, self-protection and optimism were not significant. For satisfaction with family life – a possible transfer effect outcome variable – the three-way interaction was only marginally significant (see Table 33). Optimism did not moderate the interaction. However, there was a significant effect of optimism on self-protection under different opportunity conditions (β = -.09; *S.E.* = .04; $p < .05$). The model is presented in Table 34, where one can see a significantly negative interaction term between opportunity structures and optimism. This interaction is depicted in Figure 11. Higher optimism was correlated with higher levels of self-protection under unfavorable conditions as opposed to lower levels of self-protection under more favorable conditions. Optimists thus employed self-protective strategies in an adaptive way both under favorable and unfavorable conditions. Exactly the opposite was true for pessimists. The interaction term did not substantially change after controlling for the number of highly endorsed demands (β = -.10; *S.E.* = .04; $p < .05$).

Results for self-protection (CSC I) in the family domain. Very similar results emerged for self-protection in the family domain. For the possible transfer effect outcome variable satisfaction with work the three-way interaction was marginally significant (see Table 37). For general life satisfaction (see Table 35) and satisfaction with family (see Table 36), the interaction terms were not significant. However, when predicting self-protection from family related demands, optimism did have a differential functionality under different contextual condition. As Table 38 shows, the interaction term between optimism and opportunity structures was significant (β = -.10; *S.E.* = .04; $p < .05$). It remained stable after controlling for the number of highly endorsed demands (β = -.09; *S.E.* = .03; $p < .05$). The relationship is

illustrated in Figure 12. It replicates the findings for self-protection in the work domain, although its effect size was apparently stronger. Under unfavorable condition, pessimists were less able to employ strategies of self-protection, particularly when it came to demands related to their family life. However, optimism did not at all influence the relationship between opportunity structures and self-protection in terms of subjective well-being. The only interaction term that was found significant in some of the models was a positive one between optimism and opportunity structures: Under unfavorable conditions, optimism forfeited some of its predictive power for satisfaction with life.

Results for disengagement (CSC II) in the work domain. The three-way interaction was not significant for general life satisfaction (see Table 39), satisfaction with work (see Table 40) or satisfaction with family life (see Table 41) as response variables. In two of the three models there was a substantial interaction effect between opportunity structures and optimism, but this finding has already been discussed above. A significant interaction (β = -.09; *S.E.* = .03; $p < .05$), was present though, for the second methodological approach: Table 42 presents a model for the prediction of disengagement by opportunity structures and optimism. This interaction is illustrated in Figure 13. The finding is not as clear as for the self-protection scales presented above. Whereas under favorable conditions there was a negative relationship between optimism and disengagement, there was no relationship under unfavorable conditions. The level of optimism individuals reported was thus irrelevant for their propensity to disengage under unfavorable conditions. Controlling for the number of highly endorsed demands yielded an interaction coefficient of β = -.09 (*S.E.* = .03; $p < .05$) and thus did not affect the conclusions made.

Results for disengagement (CSC II) in the family domain. The three-way interaction effects were not significant for general life satisfaction (see Table 43, satisfaction with work (see Table 44) or satisfaction with family life (see Table 45). Again, there was no differential effect of optimism under different opportunity structures and for different levels of disengagement. However, there was a significant interaction when predicting disengagement

from optimism under different opportunity structures (β = -.07; *S.E.* = .03; $p < .05$). The model coefficients for this approach are presented in Table 46 and the interaction is plotted in Figure 14. Under average and favorable conditions, optimism was negatively associated with disengagement. Under unfavorable conditions, though, the correlation between optimism and disengagement from family-related demands diminished. This finding corresponds to that for disengagement from work-related demands. Controlling for the number of highly endorsed demands did not change the interaction coefficient (β = -.07; *S.E.* = .03; $p < .05$).

Hypothesis 3

General procedure. The methodological approach to Hypothesis 3 corresponds to the approach to Hypothesis 2 with two differences. First, civic engagement was used as a predictor variable instead of optimism. Second, civic engagement was not considered a random variable. Likelihood ratio tests showed that although for general life satisfaction (Δ-*2LL* = 10.27, *df* = 3, $p < .05$) and for satisfaction with family life (Δ-*2LL* = 12.53, *df* = 3, $p < .01$) the variance components of civic engagement were significant, they were not for satisfaction with work (Δ-*2LL* = 2.19, *df* = 3, $p = .53$). In order to retain the comparability between the models, the civic engagement effect was considered fixed for all three response variables. From equation (13) the respective random part was removed yielding models defined as

$$Y_{ij} = \gamma_{00} + \gamma_{10} X_{1ij} + \gamma_{20} X_{2ij} + \gamma_{01} Z_j + \gamma_{11} X_{1ij} Z_j + \gamma_{21} X_{2ij} Z_j + \gamma_{(12)1} X_{1ij} X_{2ij} Z_j$$

$$+ u_{10} X_{1ij} + u_{0j} + e_{ij} \quad (22).$$

This modification has no negative consequences for the interpretation of the results but rather allows better to compare the models for the three different response variables.

In the first approach, three-way interactions between opportunity structures, control strategies and civic engagement were inspected. This allowed to conclude whether civic engagement was differentially correlated with measures of subjective well-being under different ecological conditions for individuals exerting different compensatory secondary control strategies. Because Hypothesis 3a is directional, one-tailed testing was performed. In

a second set of models, compensatory secondary control strategies was predicted by opportunity structures, civic engagement and the interaction between the two variables. Since a negative interaction was expected (see Hypothesis 3b), the coefficients were tested one-tailed.

Intra-class correlation for the response variables. Intra-class correlation coefficients for both satisfaction with life and the control strategies were already reported above and do not need to be repeated here.

Results for self-protection (CSC I) in the work domain. When predicting general life satisfaction (see Table 47), satisfaction with work (see Table 48) or satisfaction with family life (see Table 49), there was no significant three-way interaction between opportunity structures, self-protection and civic engagement. Although we learned that civic engagement was correlated with higher satisfaction – both general and domain-specific – it was not correlated differentially under different ecological conditions and for different levels of control striving. However, as Table 50 shows, there es a significant interaction between opportunity structures and civic engagement when predicting self-protection at the work domain (β = -.10; *S.E.* = .04; $p < .05$). Figure 15 illustrates this interaction: While under unfavorable conditions higher self-protection was positively correlated with civic engagement, the opposite was true for average and favorable conditions. Individuals who engaged in an alternative domain of life were more likely to exert self-protective strategies in the domain that was hardly controllable, namely work. The interaction term remained significant when controlling for the number of highly endorsed demands (β = -.10; *S.E.* = .04; $p < .05$).

Results for self-protection (CSC I) in the family domain. The results for family-related self-protection looked a little different. The three-way interaction was not significant when general life satisfaction (see Table 51) or satisfaction with family life (see Table 53) were considered as response variables. However, there was a significant three-way interaction between opportunity structures, self-protection and civic engagement when satisfaction with

work was investigated (see Table 52). The interaction coefficient for this transfer effect was β = -.07 (*S.E.* = .04; $p < .05$). This interaction is depicted in Figure 16 ,which again is a conditional plot but now shows the relationship between two variables as a function of two others. The conditional variables were again split into three intervals representing approximately the same number of subjects. Figure 16 suggests that the correlation between self-protection in the domain of family and satisfaction with work was highest when both work-related opportunity structures were unfavorable and the individualwas actively engaged in an alternative domain of life. It looks as if alternative involvement could effectively substitute the domain of work when the attainment of work-related demands was blocked. At the opposite side of the continuum we found a negative correlation suggesting that high levels of self-protection without engagement in another domain of life result in lower satisfaction with family life. Of course, the causal direction of the effects cannot be established with certainty. Predicting self-protection at work by opportunity structures and civic engagement revealed a significant cross-level interaction between the two variables (β = -.09; *S.E.* = .04; $p < .05$). All model parameters are presented in Table 54. Figure 17 shows that higher levels of civic engagement were positively correlated with self-protection at work, while the opposite was true for civic engagement under average and favorable conditions. After controlling for the number of highly endorsed demands, the interaction coefficient did hardly change (β = -.08; *S.E.* = .04; $p < .05$).

Results for disengagement (CSC II) in the work domain. The interaction effect between disengagement in the work domain, civic engagement and opportunity structures was not significant for the prediction of general life satisfaction (see Table 55) or satisfaction with work (see Table 56). However, as Table 57 shows, the interaction effect was significant for the prediction of satisfaction with family life. The interaction term coefficient was β = -.05 (*S.E.* = .03; $p < .05$). The interaction itself is illustrated in Figure 18 which shows the only positive correlation between disengagement and satisfaction with family life when both opportunity structures were unfavorable and individuals were highly engaged in an

alternative domain of life. This finding can be interpreted as a transfer effect between work, family, and civic engagement and emphasizes the necessity of analyzing the various contexts of human behavior and their interactions. The results presented here suggest that disengaging from unattainable demands at work is beneficial for the satisfaction with one's family life only if alternative involvement is actively pursued. Under all other combinations of opportunity structures and levels of civic engagement, disengagement from work related demands was clearly disadvantageous for one's satisfaction with family life. We also found a quite strong interaction effect between civic engagement and work related opportunity structures when predicting disengagement from work related demands (β = -.12; *S.E.* = .03; $p < .05$). Figure 19 graphically illustrates the model which coefficients are presented in Table 58. It became obvious that disengagement from work related demands and engagement in the civic domain was positively correlated when opportunity structures for the mastery of work related demands were unfavorable. We would argue that civic engagement eases the disengagement from unattainable demands, although the interpretation that higher disengagement from unattainable demands allows as a consequence more civic engagement is also plausible. The interaction coefficient did not change after controlling for the number of highly endorsed demands (β = -.12; *S.E.* = .03; $p < .05$).

Results for disengagement (CSC II) in the family domain. For disengagement from family related demands there was some support for Hypothesis 3a but none for Hypothesis 3b. Although the three-way interaction was not predictive for general satisfaction with life (see Table 59), it was significant for the two domain-specific measures of satisfaction with life. Table 60 presents the coefficients for the model related to satisfaction with work. The interaction term (β = -.06; *S.E.* = .03; $p < .05$) is depicted in Figure 20. The only substantial positive correlation between disengagement from family related demands and satisfaction at work was found under unfavorable conditions and high levels of civic engagement. Another picture emerged when satisfaction with family life was investigated as the response variable. Although the interaction term was significant (β = -.06; *S.E.* = .03; $p < .05$), Figure 21 reveals

that under no conditions disengagement from family demands was positively correlated with satisfaction with family life. However, the otherwise negative correlation disappeared when opportunity structures were unfavorable and civic engagement was high. At least, on could argue, disengagement in the family domain did not reduce satisfaction with family under these circumstances. This, though, is not what Hypothesis 3a has stated. Parameters for this model are presented in Table 61. Table 62 shows the model parameters for the prediction of disengagement by opportunity structures and civic engagement. The two-way interaction was not significant. Civic engagement was not differentially correlated with disengagement from family related demands under different ecological conditions.

Short Summary of the Results

An overview of the results concerning all three Hypotheses is presented in Table 63. Briefly summarizing the results, one could state the following: There was strong evidence that the two compensatory secondary control strategies analyzed is positively correlated with life satisfaction under unfavorable opportunity conditions (Hypothesis 1). However, self-protection and disengagement seem to have different effects depending on which indicator of life satisfaction was considered. Self-protection was more strongly associated with domain-specific measures of life satisfaction and there were both direct effects within one life domain and transfer effects between the two domains investigated. Disengagement was not associated with domain-specific life satisfaction but rather with the general measure – both in the domain of work and in the domain of family. Note that under favorable conditions the associations turned – as expected – negative.

Exploratory analyses on the effects of optimism and engagement in alternative goals were performed subsequently. Optimism did not moderate any of the interactions found (Hypothesis 2a). Regardless of the opportunities present, optimism neither amplified nor attenuated the associations between control strategies and life satisfaction. However, it was positively correlated with the levels of control considered adaptive under the different opportunity conditions (Hypothesis 2b): Under unfavorable conditions optimism was

positively associated with both self-protection and disengagement and under favorable conditions the association was negative. In other words, optimism was supportive of those control strategies that were adaptive given the respective circumstances.

Finally, the role of engagement in alternative goals for satisfaction with life (Hypothesis 3a) and control strategies (Hypothesis 3b) was investigated. The empirical support for a positive influence of engagement in alternative goals was not very convincing for associations concerning self-protection. Nevertheless, alternative engagement was positively correlated with self-protection under unfavorable conditions. Interesting results were obtained for disengagement, though. Three out of six possible three-way interactions were significant and all three pertained to domain-specific indicators of satisfaction with life. Note that when testing Hypothesis 1, there was not significant interaction between disengagement and domain-specific life satisfaction. Engagement in alternative goals thus seems to be a necessary condition that triggers the beneficial effects of disengagement for satisfaction with work and the family. There was also some support that engagement in alternative goals is positively associated with disengagement, at least in the domain of work.

Discussion

What have we learned from this study? The quite large number of regression analyses computed requires us to recapitulate the results before starting to discuss their substantial implications. Therefore, we will begin with a integrative summary of the empirical results. Subsequently, we will discuss what the results imply against the background of the demands of social change. Then, some methodological comments will be given with regard to the statistical method employed here. The discussion will conclude with an outlook on future research necessary to better understand adaptive behavior vis-a-vis developmental barriers.

Results of the Study

The first hypothesis stated that individuals who exert compensatory secondary control strategies (i.e., self-protection and disengagement) under unfavorable conditions will report higher satisfaction with life. Two dimensions of comparison were introduced in the analyses

allowing for a systematic inspection of the interaction between context and individual. The first dimension comprised subjects who live under unfavorable conditions but do not report high levels of compensatory secondary control. The second dimension used subjects who live under relatively favorable conditions. Both levels were needed in order to show that there is a functional advantage of compensatory secondary control under some but not all conditions. Consequently, two-way interactions between opportunity structures and control strategies were tested.

In terms of significant interactions a quite convincing pattern of results emerged, allowing for basically five central conclusions. First of all, higher levels of self-protective control strategies were correlated with higher levels of *domain-specific* satisfaction with life when opportunity structures are unfavorable. The effect sizes in terms of mean differences on the life satisfaction scales were quite high, indicating that self-protective strategies do not only make a statistical but also a substantial difference for subjective well-being. One might counter that this finding is trivial because the role of self-protective strategies is exactly to improve subjective well-being and the wording of the items actually taps into this issue. However, the fact that subjective well-being was assessed here in its cognitive-evaluative dimension shows that self-protection is not just relevant for the emotional or affective state of individuals. It is thus not (only) a question of feeling better and being more happy. Self-protection rather substantially changes the individual's evaluative view of his or her work and family life. More importantly, results for those individuals not living under unfavorable conditions showed that self-protective strategies were not a universal mean for improving one's satisfaction. The opposite was the case. Self-protection under more favorable conditions was *negatively* correlated with domain-specific satisfaction. Not seizing the opportunities that favorable conditions offer but rather withdrawing into self-protective attributions is dysfunctional and consequently correlated with lower satisfaction. Hence, the idea that self-protection always works and people who deny personal responsibility for their actions and hide behind alleviative attributions are always better off has to be rejected.

The second conclusion that can be drawn from the results concerns direct and indirect (or transfer) effects. Self-protection was – of course only under unfavorable conditions – positively correlated with domain-specific satisfaction both within the respective life domain and in the adjacent one. Individuals who used self-protective strategies to cope with unattainable demands at work reported higher satisfaction with work *and* their family life. The same is true for coping with demands in family life. There is also some, albeit limited evidence for general life satisfaction as the outcome variable. Only self-protective coping in the family domain was correlated with the general appraisal. The transfer effects that systematically emerged demonstrate the importance of self-protective strategies under unfavorable conditions. Unprotected exposure to unattainable demands was not only associated with decreased satisfaction in the domain of life where these demands are situated but also carried forward to other life domains. It thus undermined the motivational potential of individuals in a substantial, broad, and thus non-ignorable way.

The third conclusion pertains to the findings for disengagement as the more radical compensatory secondary control strategy that is presumably associated with more psychological costs. As hypothesized, individuals who disengaged under unfavorable conditions were more satisfied as compared to those who did not. Additionally, this correlation between disengagement and life satisfaction reversed under favorable conditions which shows that it was not disengagement *per se* that positively correlated with satisfaction. However, this hypothesis could only be confirmed with regard to general life satisfaction and not satisfaction with work or family. On the one hand, this finding emphasizes the importance of disengagement for the overall satisfaction in life. On the other hand, it raises the question of why the more proximal measures of satisfaction were not affected. In order to understand this finding one has to recapitulate the possible psychological costs that are associated with disengagement from highly normative demands, both on the motivational and emotional level. After all, the domains of life investigated here are very important and highly normative (Cantor et al., 1987; J. Heckhausen, 1999; Settersten, 1997) so that disengagement from them

can be difficult. We argue that the missing correlation between disengagement and domain-specific satisfaction is exactly due to these costs that manifest themselves domain-specifically. If individuals have to disengage from demands in a certain domain one can thus expect that they do not report high satisfaction in this domain immediately. This interpretation, though, relies on correlational data which leads us to the fourth conclusion.

When introducing Hypothesis 1, it was discussed whether the beneficial effects expected for self-protection and disengagement under unfavorable conditions could be demonstrated at all given the concurrency of assessment of control strategies and satisfaction with life. If the proposed mechanisms work, it could have been expected that the effects of compensatory secondary control would show up first after some period of time. It was argued that the immediate costs of compensatory secondary control in general and of disengagement in particular could mask their benefits and that compensatory secondary control could yield fruit after only some time has passed when individuals have, for instance, reengaged in other domains and tasks. The findings, though, clearly suggest that self-protection is associated with domain-specific satisfaction and disengagement with general life satisfaction within an immediate or at least very short period of time. The findings also suggest that, at least as far as self-protection is concerned, there are immediate benefits of this control strategy. Although we do not have specific information on when the demands started being experienced and when the compensatory secondary control strategies were initially employed, the selection of the study sample allows us to exclude some of the alternative explanations. Because the study sample only comprises individuals who reported a large number of highly endorsed demands at the time of the interview, we can be sure that it did not comprise those who have totally disengaged from these demands, because if someone totally disengaged from the demands, he or she would not have reported them as such. In other words, the individuals on whom the findings reported here are based are still involved in negotiating their demands so that the effects reported here cannot be long term effects. If only short term or immediate effects were involved, though, the differential findings for self-protection and disengagement are very

plausible. On the one hand, self-protection affected the within domain satisfaction and this is exactly how self-protection is supposed to function. On the other hand, disengagement was associated with too many immediate psychological costs to be immediately effective domain-specifically. However, it positively affected overall satisfaction with life. This is an indicator that the individual as a whole is on the right trajectory.

Finally, some remarks have to be made concerning the degree of opportunities and constraints under which the positive correlation between compensatory secondary control and satisfaction with life sets in. Opportunity structures in this study were carefully operationalized by using objective census data which allowed for the description of different contexts on various relevant dimensions. This approach also rendered possible to overcome the often dichotomous separation of opportunity structures into favorable and unfavorable ones (J. Heckhausen et al., 2001; Wrosch & Heckhausen, 1999) and to investigate continuous interaction effects between self-regulation on the one hand and opportunities and constraints on the other. Theoretically, two models are possible. One could either think of a continuous moderation effect of the context, with lower opportunity structures leading to an increasingly positive correlation between compensatory secondary control and satisfaction with life. Or, alternatively, one could assume a threshold model with a critical degree of opportunities turning compensatory secondary control functional or dysfunctional. The empirical findings presented here favor the second alternative. The graphical presentations of the interaction effects clearly show that whereas the correlation under unfavorable structures was different from that under both average and favorable opportunities, the latter two hardly differed and there was definitely no continuous relationship. Hence, there seems to be a critical degree of opportunities below where more compensatory secondary control results in higher satisfaction with life. Above this critical point, more compensatory secondary control is negatively correlated with life satisfaction and, interestingly, the actual level of opportunity structures is no longer relevant for this relationship. A rough but very simple approach to determine this critical point is to calculate the value of opportunity structures for which the

slope of the actual regression line between the control strategy and life satisfaction is zero. This estimation yields different critical values for the different combinations between control strategy and response variable. With some tolerance for inaccuracy, the following approximations describe the results best: For self-protection, the critical threshold is located around $z \approx -.20$ when satisfaction with work is considered as the outcome variable and around $z \approx -.80$ for satisfaction with family life. For disengagement and general life satisfaction it is also around $z \approx -.80$.[3] As can be seen in Table 3, the regions of Erfurt, Müritz, or Weimar are most representative for this level of opportunity structures. Interestingly, the threshold is much higher when satisfaction with work is considered as response variable as compared to satisfaction with family. Self-protection thus becomes functional at relatively high levels of opportunity structures when satisfaction with work is considered. When satisfaction with family life is considered or when disengagement from unattainable demands is analyzed, opportunity structures have to be as unfavorable as almost one standard deviation below the mean (i.e., really bad) in order to allow the respective compensatory control strategies to become effective in a positive way. These figures may also be interpreted in terms of the psychological (and other) costs associated with self-protection and disengagement respectively. Higher costs are represented by lower threshold values. When costs of self-protection and disengagement are relatively high, the ecology has to become really poor in order to allow for the benefits of these control strategies to preponderate.

Hypothesis 2 explored the conditions under which compensatory secondary control was expected to be particularly effective. It was hypothesized that dispositional optimism might play an important role in moderating the correlation between compensatory secondary control and satisfaction with life. In terms of significant interactions, the findings concerning the role of optimism were not unequivocal. However, the exploratory investigation of the relationship between optimism, opportunity structures and compensatory secondary control strategies turned out fruitful at least to some extent. In the models calculated, the two-way interaction between optimism and opportunity structures yielded several significant results.

The interaction indicated that the positive correlation between optimism and satisfaction with life *decreases* with declining opportunity structures. This either means that under unfavorable conditions prediction of life satisfaction generally becomes more ambiguous or that other variables beyond personality become more decisive. From the data available, neither of the two interpretations can be fully accepted or rejected. We would favor the second interpretation and introduce the compensatory secondary control strategies as relevant variables under unfavorable conditions. However, other findings presented here suggest that compensatory secondary control strategies were not exclusively predictive under unfavorable conditions. Rather, they were correlated to the same extent with life satisfaction under both favorable and unfavorable conditions, albeit the direction of the relationship was different. Turning to the hypothesized three-way interactions, evidence for a differential function of optimism under different ecological conditions is very weak. Not even one of the twelve interaction terms investigated turned out significant. We have to conclude that optimism is not differentially related to satisfaction with life as a function of opportunity structures and compensatory secondary control strategies. What has become clear, though, is the predictive value of optimism for the differential exertion of compensatory secondary control. Under favorable conditions, both self-protection and disengagement are negatively correlated with optimism. This is an established result that can be found throughout the literature (e.g., Carver, Scheier & Weintraub, 1989; Scheier et al., 1986) and was discussed in the introduction. In the context of the present study, this result can be considered a validation of the data and provides a background against which the function of optimism under unfavorable conditions can be discussed. When opportunity structures are unfavorable, self-protection turned out to be positively correlated with optimism while the correlation of disengagement with optimism was negligible. The first finding suggests optimism as a universal resource which enables individuals to chose control strategies appropriate to the situational opportunities and constraints. Optimism, or at least its dispositional component, seems to have triggered self-protective control strategies dependent on their adaptive function

in the course of action. If goal attainment or the mastery of demands is very likely due to contextual factors, optimists refrain from dysfunctional cognitions and presumably seize the opportunities by investing their action resources into the pursuit of their goals. If goal attainment is blocked, optimists seem to be able to hope against hope by exerting more self-protective control strategies. A plausible interpretation of this finding is that situation specific secondary control strategies represent the link between personality and subjective well-being. The second finding regarding the correlation between optimism and disengagement under unfavorable conditions does not support either position in the functionality of optimism debate. An unexpected solution of this debate might be the following: The results obtained suggest that under unfavorable conditions optimism becomes *irrelevant* with regard to the capacity of individuals to disengage from unattainable goals and demands. Again, other aspects of the personality or the situation might become decisive under unfavorable ecological conditions and future research is challenged to identify these factors. In summarizing all the findings on the role of optimism, one conclusion can be drawn with some confidence: No model ever suggested a dysfunctional role of optimism in the interaction of control strategies and opportunity structures. There was not even one combination of predictors and response variable where optimists found themselves worse off than pessimists. Under all conditions, optimism at least did no harm; under some conditions, it was associated with more adaptive control behavior and higher satisfaction with life.

Finally, the role of civic engagement was investigated hypothesizing that this form of engagement in a life domain beyond the normative would both ease compensatory secondary control strategies concerning unattainable normative demands and allow the potential positive effects on well-being to take effect. Support for the latter idea was found in particular for the disengagement aspect of compensatory secondary control. Interestingly, only transfer effects between the life domain became meaningfully significant. Under unfavorable conditions for the mastery of the respective demands, disengagement in the work domain was more positively correlated with satisfaction with family life and disengagement in the family

domain was more positively correlated with satisfaction at work – when individuals were highly engaged in the civic sector. Direct effects within the same domain could not be established. This finding again suggests that disengagement from demands within a certain life domain correlates or has to be payed with lower satisfaction in the respective domain – at least in the short run. This is plausible if one considers the negative emotional and cognitive effects of disengagement for the self-concept of individuals. These side effects do not take effect in adjacent life domains, where individuals seem to profit from disengagement immediately. For self-protection, on the other hand, there was some support for within-domain effects, at least for the domain of work. One could argue that the effects of self-protection are temporarily more proximal so that immediate relationships could have been demonstrated. The results also show, however, that self-protection sometimes needs a substantial grounding on which it is based in order to be effective. Civic engagement and the related experiences of goal striving, meaningfulness or success might be such a grounding that prevents self-protection from being illusory and volatile. One self-protective strategy where this assumption is particularly plausible is the intra-individual comparison. Without domains that offer actual reasons to believe that one's life does not only consist of failure, intra-individual comparison can very quickly become ineffective. We argue that the substitutive character of involvement in alternative goals and projects is one of the central mechanisms that allows self-protective strategies to be effective in terms of subjective well-being and life-satisfaction. However, results concerning self-protection in the family domain suggest that civic engagement might not be the appropriate substitution for the mastery of blocked demands in *every* domain of life. What was demonstrated to function in the domain of work has no effect in the domain of family. This, however, does not necessarily mean that the domain of family is generally resistant to substitution. It is very well possible that an alternative involvement that is more tightly related to the specific aspects of family life would have produced a significant interaction. In other words, civic engagement might not have functioned very well as a grounding for self-protection in the family domain. This might be

due to the fact that work and civic engagement are in the public domain whereas family belongs to the private domain, so that work and civic engagement can more easily substitute each other when, for instance, it comes attaining social prestige or social reassurance. Note, however, that for *disengagement* from unattainable family demands, it offered a quite effective short-term buffer for satisfaction with life.

How did civic engagement correlate with the two compensatory secondary strategies under different ecological conditions? There was evidence that the relationship of civic engagement with self-protection was more strongly influenced by opportunity structures than its correlation with disengagement. For both the domain of work and the domain of family, individuals who were more actively engaged in civic issues under unfavorable conditions reported more self-protective strategies which we assume to be adaptive. Again, this finding emphasizes the importance of alternative involvement when normative trajectories are blocked. Individuals who derive experiences of success from other activities in their lives are more likely to attribute their failures in the unattainable domain in a self-protective way. They thus may not have another propensity for self-protective attributions but rather have authentic reasons to believe that failures in life are not because of some stable traits within their person but vary between different situations. However, when it comes to disengagement from unattainable demands another aspect needs to be considered. One important facet of civic engagement is that it offers the possibility to substitute certain needs and goals that may not be achieved in another life domain. Indeed, if full substitution was possible, one would not expect any negative effects of unfavorable opportunity structures on subjective well-being. Individuals could simply switch between the domains and derive their self-concept from that domain that offers the highest likelihood for success. This seems partly to be true for the domain of work but not for the domain of family. Individuals who report high civic engagement under unfavorable work conditions did not only feel better but also were more likely to disengage from work related demands. Whether disengagement is a function of civic engagement or vice versa has to remain an open questions here. What we can state, though, is

the fact that this relationship could not be demonstrated for the domain of family. The tendency to disengage from demands in the family domain was not correlated with civic engagement. Again, civic engagement as measured may not able to substitute the needs that family life offers and thus cannot be considered a real alternative. If other types of alternative involvement were assessed, one would expect the same effects in this domain of life, too.

Implications for Successful Development

Taken together, the results support the theoretical considerations introduced by researchers who emphasize the importance of disengagement (e.g., Brandtstädter, 2006; J. Heckhausen, 1999; Wrosch et al., 2003a, 2003b). The crucial variable that defined whether or not disengagement is an adaptive strategy is the context. When an individual is confronted with a certain demand, he or she first needs to analyze whether the contextual opportunities and constraints offer pathways for an active primary control coping – or not. Given the opportunity structures, he or she then needs to decide whether further persistence is appropriate or whether disengagement is necessary. The differences between the different contexts do not necessarily have to be psychological ones or even be psychologically represented. Actually, an important aspect of the present study was *not* to rely on subjective measures of perceived control but rather to make use of objective descriptions of relevant contextual opportunity structures. This procedure is more conservative than relying on (necessarily) correlational data from one source, namely the individual (see Feldman & Lynch, 1988), and there is only little psychological research that follows this approach. Howsoever, future research should rely more on the assessment of opportunity structures and developmental barriers that are relevant for the attainment of personal strivings. This would not only allow us to model human behavior in context more reliably but also to identify (and foster) those objective and subjective opportunity structures that are particularly relevant for individual development.

The results presented here also suggest that favorable opportunities do not by themselves bring about positive subjective well-being and developmental barriers do not

necessarily lead to despair. The vast potential of human self-regulation renders possible a life of contentment and happiness despite objectively unfavorable situations (Abele & Becker, 1991; Brandtstädter, 2002; Diener, Suh, Lucas & Smith, 1999; Kunzmann et al., 2000; Staudinger, 2000). The regression analyses actually suggest that those living under unfavorable conditions were among the subjects reporting the highest satisfaction with life – if they managed to disengage from the unattainable demands or at least protected their motivational and emotional potential effectively. The findings concerning engagement in alternative domains of life strongly support this proposition. Thus, the central benefit of disengagement is not that it relieves individuals from the repeated experience of failure and makes them feel better. This alone could even turn out to be maladaptive in the long run. The central benefit of disengagement is that it releases resources necessary for primary control striving in other domains and opens up the mind for new and alternative options. This mechanism is today even more important than ever. Finding one's way in an individualistic society requires a balanced decision about which paths to follow, which ones give up, and which ones to take up instead.

Final Methodological Considerations

Social sciences are often interested in analyzing relationships between individual and context (Bryk & Raudenbush, 1992; H. Goldstein, 1995; Hox, 2002). The multilevel approach to such analyses offers both statistical and conceptual advantages over traditional techniques such as ordinary regression (Bryk & Raudenbush, 1992). Two statistical issues are particularly relevant. The first one is the appropriate treatment of the number of observations available at all levels of analysis. Only multilevel analysis allows for a sound interpretation of error levels for null-hypothesis testing when data from different hierarchical levels is analyzed. The second advantage refers to the appropriate consideration of the intra-class correlation which is usually present when multistage sampling is performed. Units on the lower level which belong to the same group (or regional unit) tend to be more similar to each other then units from different groups (or regional units). Statistical tests, however, heavily

rely on the assumption of independence and not considering the intra-class correlation results in spurious significance due to an underestimation of standard errors.

On the conceptual level, the multilevel approach offers the appropriate representation of the "real world" structures in the statistical models (Hox, 2002). The researcher is not only forced to carefully specify the level of analysis but also to suggest explanations for the mediating intervening processes between individual and the social context (Erbing & Young, 1979; Stinchcombe, 1968). This is particularly important against the background of different fallacies that can be committed by drawing conclusions at the wrong level of analysis (see Alker, 1969). Probably the best known fallacy is the "Robinson effect" (W. S. Robinson, 1950) or the ecological fallacy that arises from the interpretation of aggregated data on the individual level. A similar source of error is the atomistic (or individualistic) fallacy when variability found on a lower level is used for inference on a higher hierarchical level. A particularly careful interpretation is needed for cross-level interaction effects because variables of different levels are analyzed simultaneously. For instance, interpreting the change in (individual level) correlations between compensatory secondary control and subjective well-being as a political imperative to promote disengagement from social change (on a regional level) would definitely be the wrong conclusion to draw from the results presented here. The results pertain to motivational psychological mechanisms and should not be taken, for instance, as a justification for an attempt to detach entire regions from modernization.

Although the design and statistical analysis of this study were carefully conducted, some limitations that pertain to its methodology need to be discussed. The most important limitation for the interpretation of the results is the correlational nature of the data. The individual level variables were assessed simultaneously which does not allow for a straightforward conclusion of the causal direction of the effects. The differential correlations between compensatory secondary control and subjective well-being could also be interpreted in another way as proposed here: Individuals might exert different coping strategies *as a*

function of their satisfaction with life which would shed a different light on the results. Also, the results pertaining to optimism and civic engagement are plausible when interpreted the other way as suggested here. The alternative interpretation for civic engagement was already mentioned above: It cannot be decided now whether individuals who disengaged from demands of social change are more likely to take up alternative involvement or alternatively involved individuals have a more easy time disengaging from unattainable demands of social change. In order to test the causal direction of the results, a longitudinal assessment would be necessary. Although some longitudinal studies suggest that the causal interpretation offered here is very likely (e.g., Rothermund & Brandtstädter, 2003), the final proof is reserved for future research.

An important limitation to the generalizability of the results stems from the selection of the study sample. We deliberately selected those individuals who were most seriously confronted with demands of social change. The main reason for the selection of the study sample was to increase the internal validity of the control strategies which would make little sense with few or no demands at all. Strictly speaking, though, the results apply only to this group of individuals who, of course, are not randomly distributed in the population. One has to consider, for instance, that highly demanded individuals are presumably lacking some personal and social resources which are necessary to cope with the demands of social change in a problem-oriented way (Pinquart, Juang & Silbereisen, 2004; Sennett, 1998; Worth, 2002). However, the possible confounders are part of the social reality and not a product of the sampling procedure applied. Another limitation to the generalizability stems from two other sources of selectivity which could not have been controlled in this quasi-experimental study, but which might eventually turn out to be highly relevant. Because individuals were (of course) not randomly assigned to different opportunity structures, the regional affiliation was confounded with both socialization effects and migration. Both factors are likely to interfere with the variables analyzed. The first possible confounding process is a result of historical development. Because regions with low opportunity structures are mainly situated

in the Eastern part of Germany, we can hardly determine how much of the interaction effect found may be explained by different socialization and different historical experience in the two parts of Germany. The results might very well reflect some differences between the West and the East that are not compatible with the interpretation offered here. The second confounding process might be due to selective migration. An obvious alternative reaction to unfavorable opportunity structures might be to leave them and move to contexts that offer more favorable possibilities. Figures of migration from Eastern to Western Germany suggest that this type of selective primary coping is not on the fringes. Since German unification in 1990, about 3 million people (or almost 20% of the total GDR population) left Eastern Germany to head for more affluent regions in the Western part of the country and other Western European states (Grundmann, 1998). This migration was highly selective and mainly included younger and better educated individuals (Burda, 1993; Burda, Härdle, Müller & Werwatz, 1998). Although, to our knowledge, there is no comparative study regarding the preferences for primary and secondary control in those who left and those who stayed, one can imagine that the two groups significantly differ on these variables which are highly relevant for this study. And, since work-related migration is not limited to Eastern Germany but can be found throughout the country, this confounding process is likely to have influenced the present findings in a substantial way. Of course, one might argue again that this kind of migration constitutes an aspect of social reality and does not harm the validity of the results. As far as external validity is concerned, this argument is most likely valid. However, the phenomenon of selective migration is a serious threat to the internal validity of the study. In the worst case, the limitations of the study narrow the generalizability of the results to highly selective samples only. It is comforting to know, though, that these selective samples actually exist in reality and are not a result of some artificial sampling procedure.

Propositions for a Research Agenda

The results presented here are a starting point for further research on developmental barriers. They suggest the presence of an interesting interaction between individual self-

regulation processes and ecological conditions relevant for personal goal striving. Much work is still needed, though, so that the final pages of this study shall be devoted to an outlook of a possible research agenda on this topic. Nine issues that we consider particularly relevant will be raised in the following.

First, longitudinal studies are needed to confirm the direction of relationship assumed between control strategies (as self-regulatory processes) and subjective well-being (as indicators for the motivational and emotional potential). One cannot expect simple, unidirectional relationships here. Control striving and capacity for control are highly intertwined psychological processes which are moderated by objective factors such as the actual opportunities and constraints for primary and secondary control (J. Heckhausen, 1999; Schulz & Heckhausen, 1999). However, it is important to show that control striving has an *effect* that can be measured and quantified. One of the central problems in longitudinal research is the selection of sensible (and sensitive) measurement occasions both in terms of time-lags and frequency of assessment. The results presented here suggest that self-protection and disengagement follow different temporal patterns with self-protection yielding more proximal effects and disengagement more distal ones. Longitudinal research comprising only two measurement occasions will thus presumably not suffice to do justice to the different process timing. Micro-sequential analysis with frequent measurements and short time lags might be the best approach under the given circumstances and would allow important insight into the dynamics of self-regulation. Studies investigating long-term effects would also be desirable, although specifying the appropriate time lag would require detailed knowledge of the specific subject studied. When long-term developmental goals in particular are investigated, benefits of disengagement could become obvious in the long run, possibly even after years.

Second, reliable causal inferences can only be obtained in experimental settings where the researcher can deliberately manipulate the relevant conditions (Chalmers, 1999; but see Wegener & Fabrigar, 2000). This was neither possible nor desirable in the context of the

present study. However, one might think of game theoretical approaches that might turn out both feasible and valid. The interactive nature of the research subject would require to both manipulate opportunity structures and to induce different control strategies. One issue should not be forgotten, though. Although experimental approaches provide results of high internal validity, they cannot be unconditionally transferred to real developmental contexts. It was already discussed that some special selectivity might be (partly) responsible for the results reported here, namely the negative correlation between personal resources and experienced demands of social change. Statistically controlling for the amount of personal resources might not be sufficient to increase the external validity of an experimental design.

Third, we have to acknowledge that the statistical approach to the entire subject does not tell us much about the subjective experience of secondary control under the conditions of developmental barriers. The standardized scales assessed allow little if any inference about the subjective representation of relevant opportunities, the concrete strategies used, their intensity and their specific content. Also, little can be said about the integration of secondary control episodes into the autobiographical narrative of individuals (but see Barrett, 1998; Tunali & Power, 1993). In order to better understand how processes of self-protection and disengagement are experienced from the subjective perspective, qualitative methods might be a fruitful approach. This would also allow one to explore the inter-individual variance behind the standardized responses. Stories of successful disengagement from unattainable demands, though, are not only interesting from a scientific perspective. They may also provide realistic and convincing models of successful coping under turbulent and unfavorable conditions. Taking into account the silence that prevails over the entire public discussion on disengagement and failure, making such narratives accessible might enrich the entire debate on coping with demands of social change.

Future research should, fourth, systematically investigate further variables and processes that are associated with the different aspects of compensatory secondary control. The interested reader is referred to Wrosch and colleagues (2003a) who discuss various

factors including those relating to self, personality, and the individual's location in the life-course, task specific factors and factors associated with the social environment. The potentially large universe of variables and processes associated with compensatory secondary control makes their identification and investigation a multidisciplinary endeavor. Theories and methods from research on personality, developmental science and motivational, as well as social psychology, can provide guidelines for potentially promising constructs and adequate methodological approaches. This would help us to describe and predict why some people more easily disengage from unattainable goals and demands than others and why some people profit from disengagement while others do not.

From a developmental psychological perspective we are not only interested in inter-individual differences in the propensity for compensatory secondary control but also, fifth, in intra-individual change of compensatory secondary control throughout the life span (see Baltes & Nesselroade, 1979). A few studies observed the ability of young children to distinguish between favorable and unfavorable situations and to adjust their control strategies accordingly (e.g., Saile & Hülsebusch, 2006). Although the development of compensatory secondary control was to our knowledge not investigated in a systematic way, we know quite a lot about the development of achievement motivation in children (J. Heckhausen & Heckhausen, 2006). The way children process the (frequent) experiences of failure and subsequently adjust their aspirations might play a decisive role in the development of compensatory secondary control strategies. The achievement motivational approach can thus offer fruitful theoretical pathways to this fascinating topic. The success of this scientific endeavor, however, relies on the ability of psychological research to measure compensatory secondary control in children in a reliable and valid way. Such measurement instruments are available for adults only, which is probably one of the main reasons why our knowledge on compensatory secondary control is more comprehensive for this age group. Research on aging, in particular, offers, up to this point, the most extensive theoretical and empirical knowledge base on compensatory secondary control (Brandtstädter, 2002, 2007). Ideas for

how this knowledge can be applied to other phases of the life span have already been introduced above (see also Brandtstädter, 2006).

Sixth, future research should clearly distinguish between objective developmental barriers and their subjective representations in order to understand which variables are subjectively relevant for the individual control behavior. These variables do not necessarily have to be the same as the objective factors that further or hinder the mastery of goals and demands and may be even more predictive for actual behavior (J. P. Robinson, 1983). Subjective and objective expectations will most likely differ unless the tasks are kept very simple and concise as is the case in many achievement motivational experiments. In the real world, one can think of a plethora of factors that bias subjective expectations. Identifying these factors is necessary for planning successful interventions that support (or prevent) self-protection and disengagement processes.

Seventh, dwelling on the subject of developmental barriers, future research should also try to establish more fine-grained measures of opportunity of constraints. Developmental barriers are not exclusively properties of the environment. Rather, they derive from the transaction between relevant contextual and individual characteristics. In Lewinian terms, the space of free movement is impeded by boundaries that represent both environmental constraints and individual limitations. The risk of unemployment, for instance, is not only a function of macro-economical parameters, but also dependent on the individual level of education. One could therefore think of determining *individual* developmental barriers by considering relevant information both on the level of context and the individual. It is, then, fascinating to speculate whether exogenous factors that change the individual's space of free movement (e.g., a macro-economical depression) have other effects on compensatory secondary control and its functioning than endogenous factors (e.g, work-relevant impairment due to an accident).

The eight issue to be discussed in this outlook is situated at the margins of psychological research and is tangent to the micro-sociological and economic disciplines. It

shall be only mentioned here without going into further details. The present study has demonstrated how ecological conditions shape individual adaptive behavior and how the interaction between context and individual affect the functionality of adaptive behavior on an individual level. The next logical step would be, though, to show how individual adaptive behavior feeds back on the contextual level. We are aware of only few studies that empirically demonstrate the transmission mechanism from individual to the context most of which are not genuine psychological (e.g., Piazza-Georgi, 2002; Putnam, Leonardi & Nanetti, 1993). Processes of collective action or the accumulation of social capital, but also direct influences such as voting behavior, are promising candidates for filling the gap between individual adaptive behavior and its effects on socio-political and socio-economical development at the level of communities, regions and, finally, societies as a whole.

These considerations lead us to the ninth and final issue to be discussed. The points raised in this outlook are only those that seemed particularly relevant in the present context. There are certainly other important issues that had to be neglected due to the limited scope of this thesis. Also, the points mentioned appear somehow solitary and not very connected with each other. New empirical findings of future research (as, for instance, suggested above) will presumably not change this situation for the better. What we need is a theoretical approach to compensatory secondary control, in other words: a theory of failure. Such a theory should include the different antecedents, concurrent processes, and consequences of compensatory secondary control. It should be able to specify its necessary and sufficient conditions, and to predict possible outcomes. Given the complexity of human behavior, addressing different levels of analysis if essential. Biological and neuro-psychological correlates of compensatory secondary control mechanisms have to be explored which would allow for further insights into the basal processes associated with the emotional and cognitive experience of failure. The psychological level was thoroughly addressed in the present study although the findings can only be a first step towards an integrated knowledge of all aspects relevant. Psycho-social and cultural conditions of compensatory secondary control probably require the most

theoretical elaboration. They are urgently needed in times of rapid and radical social change. A bio-psycho-social theory of failure can extend our understanding of this important facet of self-regulation. Such a theoretical progress would not only add to scientific knowledge, but applied developmental science would also profit from a well-founded theory.

Conclusion

The antagonism of primary and secondary mode of coping is a traditional topic in philosophical anthropology (Tatarkiewicz, 1984) and has been addressed in various philosophical approaches to wisdom and successful development (Kamlah, 1973; Schopenhauer, 1851). From this broader perspective, the psychological propositions for an adaptive balance of primary and secondary control build in a long-standing intellectual tradition. Many psychological authors such as Elster (1983), Brandtstädter (1989; Brandtstädter & Baltes-Götz, 1990; Brandtstädter & Renner, 1990), or J. Heckhausen (1999; J. Heckhausen & Schulz, 1995, 1998; Schulz & Heckhausen, 1996) implicitly or explicitly refer to the idea that a satisfying developmental perspective can only be achieved by balancing both instrumental efforts and adaptation of goals and preferences to situational constraints. Under the present conditions of social change, finding an adaptive balance between “hanging on and letting go” (Pyszczynski & Greenberg, 1992) represents a task individuals are increasingly confronted with. Wrosch and Freund (2001) thus consequently emphasize the increased need for self-regulation. The authors argue that both more selection *and* more compensation are required for a successful human development throughout the life span. An elaborated investigation of this issue is offered by Brandtstädter (2006) in a recent paper dealing with agency in developmental settings of modernity. The author shares the conviction that notions of optimal development focusing only on self-actualization and primary control striving are of limited value in settings where uncertainty and complexity became critical for negotiating the life-course. Developmental trajectories that are blocked and no longer accessible need to be given up in order to prevent them turning into sources of frustration and depression. Modernity thus *emphasizes* the basic dilemma of action

regulation: the tension between tenacious goal pursuit and flexible goal adjustment to new patterns of opportunities and constraints (see also Grossberg, 1987).

Overall, this investigation provided empirical evidence for these assumptions. It focused on one of the two basic aspects of action regulation, namely the ability to adjust one's aspirations to the given constraints. It was demonstrated that under certain circumstances individuals can and should partly or totally disengage from demands, even when they are highly normative. More specifically, compensatory secondary control strategies of self-protection and disengagement were positively associated with different measures of satisfaction with life. The adaptive value of self-protection and disengagement, however, was reliant on two parameters. First, developmental barriers for mastering a certain demand need to be high and, second, there had to be domains available which offer more promising opportunities for an alternative reengagement. Note that both parameters address features of the context in which goals and plans are pursued. This fact emphasizes the theoretical proposition that it is hardly possible to understand the most important aspects of human development without taking contextual factors into account. Human development is always a development within a contextual framework (Connell, 1990; Lerner, 1998; Lerner & Busch-Rossnagel, 1981b; Silbereisen et al., 1986) which offers biologically and socio-structurally graded trajectories for individual agency (J. Heckhausen & Dweck, 1998; J. Heckhausen & Schulz, 1995; Shanahan & Hood, 2000). A merit of this study was to actually measure and to take into account contextual opportunity structures as indicated by objective criteria. The concept of opportunity structures (and of developmental barriers as a particular specification of opportunity structures) seems to be a promising approach to the understanding of the transmission mechanism between individual and context. Because opportunity structures are directly linked to the personal goal structure and goal hierarchy of individuals, they represent an important link between the two levels of analysis. This link is most likely moderated by other psychological and sociological variables. The results of this study provided some evidence that an optimistic attitude towards the future might be a beneficial personality

characteristic that helps individuals to adjust their control strategies to the changing opportunity structures in an adaptive way. The findings of this study are thus reminiscent of a line of research that gave proof of the positive effects of optimism for physical and psychological well-being and related issues (Scheier et al., 2001). Extending previous studies, however, our findings demonstrated optimism as a possible moderator between individual control strategies and contextual opportunity structures. This finding is a first important step in defining those personality characteristics that are important for a successful negotiation of one's life-course in times of social change. Optimists seem to adjust their compensatory secondary control strategies more adaptively to the given opportunities, presumably because they are more likely to see the positive side or the benefits of disengagement and not only its costs. In a society which confronts its subjects with rapidly waxing and waning opportunities and constraints, being optimistic might be a key to a smooth adaptation to a new situation without the loss of the sense for a coherent meaning of one's life-course.

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FOOTNOTES

[1]As a matter of fact, all of us face a large number of developmental barriers which we are not always aware of. For instance, the probability of becoming a world-class opera singer is for most of us very low at every point of our life-course.

[2] In Mecklenburg-West Pomerania, Thuringia, and Schleswig-Holstein, the target areas were “Landkreise” and “kreisfreie Städte”, i.e. administrative counties. In Baden-Wurttemberg these units are much smaller than in the other federal states, so they were combined into economic regions of multiple counties. This practice and the allocation of counties to economic regions is adopted from the Statistical Office of Baden-Wurttemberg.

[3] Note, that by chance the cut-off values chosen in Figures 4 to 21 roughly correspond to the threshold of $z \approx -.80$ computed here.

TABLES

Table 1. Socio-demographic characteristics of the initial and the study sample.

	Initial Sample *N* = 2,863 (100%)	Study Sample *N* = 806 (28.2%)
Age		
– under 20 years	417 (14.6%)	84 (10.4%)
– 20-30 years	845 (29.5%)	260 (32.3%)
– 30-40	941 (32.9%)	283 (35.1%)
– 40 and more	660 (23.1%)	179 (22.2%)
Gender (males)	1,315 (45.9%)	349 (43.3%)
Education[a]		
– compulsory schooling	662 (23.1%)	469 (58.2%)
– high-school	1497 (52.3%)	227 (28.2%)
– college-bound	704 (24.6%)	110 (13.6%)
Marital status		
– single	1,548 (54.1%)	421 (52.2%)
– married	1,085 (37.9%)	297(36.8%)
– divorced	213 (7.4%)	82 (10.2%)
– widowed	17 (0.6%)	6 (0.7%)
Number of children		
– none	1,496 (52.3%)	349 (43.3%)
– one	590 (20.6%)	196 (24.3%)

– two or more	777 (27.1%)	261 (32.4%)
Employment status		
– gainfully employed	1,475 (51.5%)	338 (41.8%)
– still in education	591 (20.6%)	110 (13.6%)
– unemployed	459 (16.0%)	253 (31.4%)
– others or missing	338 (11.8%)	106 (13.2%)
Federal state of residence		
– Schleswig-Holstein	705 (24.6%)	167 (20.7%)
– Mecklenburg-W. Pomerania	698 (24.4%)	241 (29.9%)
– Baden-Wurttemberg	751 (26.2%)	149 (18.5%)
– Thuringia	709 (24.8%)	249 (30.9%)
Community size		
– less than 20,000	1,506 (52.6%)	449 (55.7%)
– 20,000-100,000	828 (28.9%)	239 (29.7%)
– more than 100,000	529 (18.5%)	118 (14.6%)

Note: [a] For participants who finished school, the highest degree achieved was used; for pupils, the present school type was coded.

Table 2. Mean endorsement to demands in the domains of work and family.

Item	M	SD	highly endorsed
Planning career	4.02	2.15	31.1%
Part-time work	4.33	2.22	38.6%
Job loss	4.48	2.22	42.0%
Unforeseen events	4.28	2.02	31.9%
Qualification gap	4.60	2.07	41.1%
Job opportunities	5.06	2.03	52.4%
Family decisions	4.57	2.08	40.3%
Child wish	4.35	2.33	40.6%
Knowledge of parents	3.74	1.90	20.2%
Financial dependency	2.86	2.00	13.6%
Reliability of contacts	3.15	1.83	12.4%
Separation	3.25	2.09	18.4%

Note: $N = 2863$.

Table 3. Indicators of opportunity structures by county.

County	Work	Family
Schleswig-Holstein		
Flensburg	-.34	-1.07
Kiel	-.51	-1.40
Lübeck	-.36	-1.40
Neumünster	-.18	-.98
Dithmarschen	.33	.94
Herzogtum Lauenburg	1.00	.94
Nordfriesland	.97	1.05
Ostholstein	.67	.07
Pinneberg	.82	.63
Plön	.55	.78
Rendsburg-Eckernförde	.98	1.17
Schleswig-Flensburg	.77	1.51
Segeberg	-.28	.71
Steinburg	.42	.98
Stormarn	1.30	.95
Baden-Wurttemberg		
Stuttgart (Stadt)	1.11	.38
Esslingen	2.01	1.80
Ludwigsburg	1.86	2.16
Rems-Murr-Kreis	1.66	1.80
Heilbronn (Stadt)	1.04	1.07
Hohenlohekreis	1.73	2.25

Schwäbisch-Hall	1.64	2.23
Ostalbkreis	1.38	2.20
Baden-Baden	1.10	.80
Karlsruhe (Stadt)	.89	.35
Karlsruhe (Kreis)	1.52	1.77
Heidelberg	.55	.18
Mannheim	.49	-.09
Neckar-Odenwald-Kreis	1.10	1.77
Rhein-Neckar-Kreis	1.28	1.66
Pforzheim	.81	.68
Enzkreis	1.83	2.37
Freiburg i. Br.	.71	-.04
Schwarzwald-Baar-Kreis	1.60	2.12
Konstanz	1.20	1.08
Lörrach	1.48	1.26
Reutlingen	1.72	1.81
Tübingen	1.48	1.66
Ulm	1.07	.75
Alb-Donau-Kreis	1.87	2.38
Sigmaringen	1.35	2.01
Mecklenburg-Vorpommern		
Greifswald	-1.28	-1.90
Neubrandenburg	-1.31	-1.28
Rostock	-.82	1.07
Schwerin	-.56	-1.51
Stralsund	-1.38	-1.80
Wismar	-.72	-1.48

Bad Doberan	-.25	.32
Demmin	-1.67	-.56
Güstrow	-1.20	-.37
Ludwigslust	.54	.21
Mecklenburg-Strelitz	-1.42	-.22
Mürritz	-.83	-.57
Nordvorpommern	-1.18	-.63
Nordwestmecklenburg	-.10	.09
Ostvorpommern	-1.04	-.52
Parchim	-.48	.09
Rügen	-.06	-.77
Uecker-Randow	-2.03	-.96
Thuringia		
Erfurt	-.82	-.81
Gera	-.94	-1.11
Jena	.05	-.48
Suhl	.06	-.64
Weimar	-.99	-.77
Eisenach	.06	-.79
Eichsfeld	.23	.68
Nordhausen	-.71	-.40
Wartburgkreis	.75	.44
Unstrut-Hainichen	-.11	.08
Kyffhäuserkreis	-1.35	-.55
Schmalkalden-Meiningen	.52	-.10
Gotha	.13	.08
Sömmerda	-.46	-.31

Hildburgshausen	.62	.10
Ilmkreis	-.68	-.40
Weimarer Land	-.23	-.12
Sonneberg	.88	.02
Saalfeld-Rudolstadt	-.29	-.42
Salle-Holzland-Kreis	.16	-.24
Saale-Orla-Kreis	.14	-.53
Greiz	-.35	-.40
Altenburger Land	-1.03	-.85

Note: All scores were z-standardized (M = 0.00, SD = 1.00) based on the sample of individuals.

Table 4. Items for the assessment of the control strategies in the order of the questionnaire.

1) I am also prepared to make a big effort in order to find a good solution.
2) If I get stuck then I take advantage of all help I get get to make headway.
3) I tell myself time and time again that I can manage it if I only set my mind to it.
4) If I can't find a solution then I put the problem to the back of my mind.
5) If I can't handle these changes then I search for grounds not to have to give myself the blame.
6) No trouble is too much for me in handling these changes as long as it is worth my while.
7) If I am not making any progress then I ask other people for ways and means of finding a solution.
8) If I can't find a solution then I search for explanations which enable me to justify myself in my own mind.
9) If nothing works out then I no longer take the whole thing so seriously.
10) I imagine over and over again how happy I will be when I find a good solution.
11) I don't hesitate long when it comes to finding a good solution but rather do something towards solving the problem.
12) If I get stuck then I weigh up who I could ask for help.
13) In order to make progress I avoid anything which could distract my attention.
14) If I don't manage to find a good solution whatsoever then I search for plausible reasons why I am not at fault.
15) If I can't handle these changes at all then I don't concern myself with them any longer.

Table 5. Parameter estimates of the latent measurement model for Selective Primary Control.

	General	$Domain_{(2-1)}$	$Domain_{(3-1)}$	$Method_{(2-1)}$	$Method_{(3-1)}$
			Factor Loadings		
Work #1	.84	-	-	-	-
Work #2	.86	-	-	.52	-
Work #3	.89	-	-	-	.52
Family #1	.84	.41	-	-	-
Family #2	.84	.40	-	.63	-
Family #3	.87	.40	-	-	.55
Public #1	.80	-	.47	-	-
Public #2	.82	-	.44	.62	-
Public #3	.85	-	.37	-	.55
			Means and Variances		
M	5.52	0.08	-0.10	-0.24	0.08
Var	1.30	0.31	0.45	0.48	0.44
			Correlations		
	General	$Domain_{(2-1)}$	$Domain_{(3-1)}$	$Method_{(2-1)}$	$Method_{(3-1)}$
General	1.00				
$Domain_{(2-1)}$	-.12	1.00			
$Domain_{(3-1)}$	-.07	.39	1.00		
$Method_{(2-1)}$	-.41	-.05	-.06	1.00	
$Method_{(3-1)}$	-.38	-.04	.03	.58	1.00

Table 6. Parameter estimates of the latent measurement model for Selective Secondary Control.

	General	$Domain_{(2-1)}$	$Domain_{(3-1)}$	$Method_{(2-1)}$	$Method_{(3-1)}$
			Factor Loadings		
Work #1	.83	-	-	-	-
Work #2	.70	-	-	.72	-
Work #3	.71	-	-	-	.72
Family #1	.82	.33	-	-	-
Family #2	.70	.28	-	.72	-
Family #3	.70	.32	-	-	.72
Public #1	.81	-	.34	-	-
Public #2	.70	-	.37	.70	-
Public #3	.70	-	.35	-	.70
			Means and Variances		
M	5.68	-0.04	-0.14	-0.58	-0.87
Var	1.12	0.18	0.20	1.19	1.15
			Correlations		
	General	$Domain_{(2-1)}$	$Domain_{(3-1)}$	$Method_{(2-1)}$	$Method_{(3-1)}$
General	1.00				
$Domain_{(2-1)}$	-.11	1.00			
$Domain_{(3-1)}$	-.06	.44	1.00		
$Method_{(2-1)}$	-.34	.02	-.05	1.00	
$Method_{(3-1)}$	-.35	-.09	.01	.30	1.00

Table 7. Parameter estimates of the latent measurement model for Compensatory Primary Control.

	General	$Domain_{(2-1)}$	$Domain_{(3-1)}$	$Method_{(2-1)}$	$Method_{(3-1)}$
			Factor Loadings		
Work #1	.85	-	-	-	-
Work #2	.85	-	-	.45	-
Work #3	.83	-	-	-	.49
Family #1	.80	.47	-	-	-
Family #2	.78	.59	-	.51	-
Family #3	.78	.51	-	-	.57
Public #1	.80	-	.49	-	-
Public #2	.81	-	.51	.45	-
Public #3	.79	-	.47	-	.44
			Means and Variances		
M	5.58	-0.13	-0.19	-0.12	-0.02
Var	1.28	0.43	0.47	0.36	0.45
			Correlations		
	General	$Domain_{(2-1)}$	$Domain_{(3-1)}$	$Method_{(2-1)}$	$Method_{(3-1)}$
General	1.00				
$Domain_{(2-1)}$	-.14	1.00			
$Domain_{(3-1)}$	-.10	.58	1.00		
$Method_{(2-1)}$	-.32	-.10	-.09	1.00	
$Method_{(3-1)}$	-.27	-.10	.68	.68	1.00

Table 8. Parameter estimates of the latent measurement model for Compensatory Secondary Control I.

	General	$Domain_{(2-1)}$	$Domain_{(3-1)}$	$Method_{(2-1)}$	$Method_{(3-1)}$
			Factor Loadings		
Work #1	.81	-	-	-	-
Work #2	.81	-	-	.52	-
Work #3	.84	-	-	-	.53
Family #1	.83	.33	-	-	-
Family #2	.82	.33	-	.65	-
Family #3	.83	.34	-	-	.58
Public #1	.83	-	.37	-	-
Public #2	.82	-	.39	.55	-
Public #3	.84	-	.39	-	.56
			Means and Variances		
M	3.23	0.00	0.00	0.31	0.06
Var	1.96	0.32	0.39	0.81	0.79
			Correlations		
	General	$Domain_{(2-1)}$	$Domain_{(3-1)}$	$Method_{(2-1)}$	$Method_{(3-1)}$
General	1.00				
$Domain_{(2-1)}$	-.04	1.00			
$Domain_{(3-1)}$	-.11	.58	1.00		
$Method_{(2-1)}$	-.32	-.13	-.08	1.00	
$Method_{(3-1)}$	-.30	-.13	-.03	.46	1.00

Table 9. Parameter estimates of the latent measurement model for Compensatory Secondary Control II.

	General	$Domain_{(2-1)}$	$Domain_{(3-1)}$	$Method_{(2-1)}$	$Method_{(3-1)}$
			Factor Loadings		
Work #1	.82	-	-	-	-
Work #2	.84	-	-	.44	-
Work #3	.86	-	-	-	.49
Family #1	.82	.35	-	-	-
Family #2	.83	.41	-	.51	-
Family #3	.86	.40	-	-	.57
Public #1	.83	-	.39	-	-
Public #2	.84	-	.39	.52	-
Public #3	.85	-	.42	-	.56
			Means and Variances		
M	3.02	0.00	0.18	0.02	-0.01
Var	2.16	0.39	0.49	0.58	0.71
			Correlations		
	General	$Domain_{(2-1)}$	$Domain_{(3-1)}$	$Method_{(2-1)}$	$Method_{(3-1)}$
General	1.00				
$Domain_{(2-1)}$	-.11	1.00			
$Domain_{(3-1)}$	-.11	.57	1.00		
$Method_{(2-1)}$	-.29	-.07	-.08	1.00	
$Method_{(3-1)}$	-.30	-.08	-.05	.52	1.00

Table 10. Multivariate logistic regression model for the prediction of membership in the study sample group.

Variable	*B* (*SE*)	Wald (*df*)	e^B	*p*
Age	-.01 (.01)	2.52 (1)	.99	.11
Gender[a]	.14 (.09)	2.22 (1)	1.15	.14
Education[b]		32.41 (2)		<.01
– high-school	-.18 (.11)	2.51 (1)	1.19	.11
– college-bound	-.63 (.13)	24.75 (1)	.53	<.01
Marital status[c]		3.97 (3)		.26
– married	-.16 (.13)	1.45 (1)	.85	.23
– divorced	.14 (.19)	.58 (1)	1.16	.45
– widowed	.13 (.55)	.05 (1)	1.13	.82
Number of children	.27 (.06)	9.23 (1)	1.18	<.01
Employment status[d]		108.17 (3)		<.01
– still in education	-.19 (.16)	1.37 (1)	.83	.24
– unemployed	1.16 (.12)	94.62 (1)	3.19	<.01
– others/missing	.27 (.06)	3.35 (1)	1.31	.07
Federal State[e]		33.89 (3)		<.01
– Schleswig-Holstein	.19 (.14)	2.01 (1)	1.21	.16
– Mecklenburg-W. P.	.54 (.14)	14.66 (1)	1.71	<.01
– Thuringia	.72 (.14)	28.41 (1)	2.06	<.01
Community Size[f]		.64 (2)		.73
– below 20,000	.04 (.13)	.11 (1)	1.05	.74
– 20,000-100,000	.11 (.14)	.55 (1)	1.11	.46
Constant	-1.41 (.33)	18.63 (1)		<.01

Note: Model log-likelihood -*2LL* = 3109.30 with Pseudo-R^2 = .10 according to Cox and Snell; [a] Reference category is “male”; [b] Reference category is “compulsory school”; [c] Reference category is “single”; [d] Reference category is “gainfully employed”; [e] Reference category is “Baden-Wurttemberg”; [f] Reference category is “above 100,000”.

Table 11. Descriptive statistics of the central variables in the initial and the study sample.

	Initial Sample	Study Sample
	N = 2,863 (100%)	*N* = 806 (28.2%)
Selective Primary Control		
– Work	5.31 (1.14)	5.56 (1.15)
– Family	5.47 (1.21)	5.74 (1.20)
Selective Secondary Control		
– Work	5.68 (1.06)	5.92 (1.04)
– Family	5.64 (1.10)	5.89 (1.06)
Compensatory Primary Control		
– Work	5.58 (1.13)	5.90 (1.12)
– Family	5.45 (1.23)	5.77 (1.24)
Compensatory Secondary Control I		
– Work	3.27 (1.40)	3.42 (1.58)
– Family	3.22 (1.49)	3.38 (1.68)
Compensatory Secondary Control II		
– Work	3.02 (1.47)	2.98 (1.64)
– Family	3.01 (1.53)	2.98 (1.68)
Dispositional optimism	5.25 (1.05)	5.28 (1.17)
Alternative involvement	2.96 (2.35)	2.60 (2.33)
Satisfaction with life	5.04 (1.37)	4.51 (1.56)
Satisfaction with work	4.80 (1.81)	4.12 (2.14)
Satisfaction with family	5.58 (1.46)	5.48 (1.64)

Table 12. Model comparisons for general life satisfaction and self-protection in the work domain.

Model	*df*	*AIC*	*BIC*	*-2LL*	*LR*	*p*
M_0	3	2271.59	2285.67	1132.80		
M_1	4	2273.40	2292.17	1132.70	.19	.66
M_2	6	2263.77	2291.93	1125.89	13.63	<.01
M_3	7	2264.19	2297.04	1125.10	1.58	.21
M_4	8	2264.62	2302.16	1124.31	1.57	.10
M_5	9	2248.49	2290.71	1115.24	18.14	<.01

Table 13. Model comparison for satisfaction with work and self-protection in the work domain.

Model	*df*	*AIC*	*BIC*	*-2LL*	*LR*	*p*
M_0	3	2270.02	2284.10	1132.01		
M_1	4	2271.91	2290.67	1131.95	.12	.73
M_2	6	2273.07	2301.22	1130.53	2.84	.24
M_3	7	2274.79	2307.67	1130.39	.28	.60
M_4	8	2271.59	2309.13	1127.80	5.19	.01
M_5	9	2238.42	2280.65	1110.21	35.17	<.01

Table 14. Model parameters for the prediction of satisfaction with work by self-protection in the work domain and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.045 (.050)	722	-.91	.36
SELFPR	-.019 (.039)	722	-.48	.63
OPPORT	.018 (.051)	80	.36	.71
SELFPR × OPPORT	-.087 (.037)	722	-2.37	<.01
Random Effect	σ^2			
u_0	.294			
u_1	.104			
e	.946			
Deviance				
AIC	2271.59			
BIC	2309.13			
-2LL	1127.80			

Table 15. Model comparisons for satisfaction with family life and self-protection in the work domain.

Model	*df*	*AIC*	*BIC*	*-2LL*	*LR*	*p*
M_0	3	2283.40	2297.48	1138.70		
M_1	4	2283.16	2301.93	1137.58	2.24	.13
M_2	6	2276.98	2305.13	1132.49	10.18	.01
M_3	7	2267.65	2300.49	1126.82	11.33	<.01
M_4	8	2265.77	2303.30	1124.88	3.88	.02
M_5	9	2266.65	2308.88	1124.32	1.18	.29

Table 16. Model parameters for the prediction of satisfaction with family life by self-protection in the work domain and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.021 (.039)	722	-.54	.59
SELFPR	-.086 (.046)	722	-1.88	.06
OPPORT	-.149 (.039)	80	-3.80	<.01
SELFPR × OPPORT	-.090 (.045)	722	1.99	.02
Random Effect	σ^2			
u_0	.134			
u_1	.217			
e	.951			
Deviance				
AIC	2265.77			
BIC	2303.30			
-2LL	1124.88			

Table 17. Model comparisons for general life satisfaction and self-protection in the family domain.

Model	*df*	*AIC*	*BIC*	*-2LL*	*LR*	*p*
M_0	3	2271.59	2285.67	1132.80		
M_1	4	2273.46	2292.23	1132.73	.13	.72
M_2	6	2266.53	2294.68	1127.27	10.93	<.01
M_3	7	2267.15	2299.99	1126.57	1.38	.24
M_4	8	2266.26	2303.80	1125.13	2.89	.04
M_5	9	2266.71	2308.94	1124.35	1.55	.21

Table 18. Model parameters for the prediction of general life satisfaction by self-protection in the family domain and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.022 (.048)	722	.45	.65
SELFPR	-.039 (.043)	722	-.91	.36
OPPORT	.030 (.046)	80	.64	.52
SELFPR × OPPORT	-.072 (.042)	722	-1.70	.04
Random Effect	σ^2			
u_0	.277			
u_1	.173			
e	.942			
Deviance				
AIC	2266.26			
BIC	2303.80			
-2LL	1125.13			

Table 19. Model comparisons for the satisfaction with work and self-protection in the family domain.

Model	*df*	*AIC*	*BIC*	*-2LL*	*LR*	*p*
M_0	3	2270.02	2284.10	1132.01		
M_1	4	2272.02	2290.79	1132.01	<.01	.98
M_2	6	2273.12	2301.28	1130.56	2.90	.23
M_3	7	2273.44	2306.28	1129.72	1.69	.19
M_4	8	2270.61	2308.15	1127.31	4.83	.01
M_5	9	2269.71	2311.93	1125.85	2.91	.09

Table 20. Model parameters for the prediction of satisfaction with work by self-protection in the family domain and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.046 (.050)	722	-.93	.35
SELFPR	-.008 (.040)	722	-.20	.84
OPPORT	.055 (.048)	80	1.14	.26
SELFPR × OPPORT	-.089 (.040)	722	-2.24	.01
Random Effect	σ^2			
u_0	.296			
u_1	.124			
e	.943			
Deviance				
AIC	2270.61			
BIC	2308.15			
-2LL	1127.31			

Table 21. Model comparisons for satisfaction with family and self-protection in the family domain.

Model	*df*	*AIC*	*BIC*	*-2LL*	*LR*	*p*
M_0	3	2283.40	2297.48	1138.70		
M_1	4	2282.73	2301.50	1137.36	2.67	.10
M_2	6	2276.58	2304.73	1132.29	10.15	<.01
M_3	7	2275.32	2308.16	1130.66	3.26	.07
M_4	8	2270.62	2308.16	1127.31	6.70	<.01
M_5	9	2255.11	2297.33	1118.55	17.52	<.01

Table 22. Model parameters for the prediction of satisfaction with family by self-protection in the family domain and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.026 (.042)	722	-.62	.54
SELFPR	-.095 (.046)	722	-2.06	.04
OPPORT	-.090 (.041)	80	-2.18	.03
SELFPR × OPPORT	-.120 (.046)	722	-2.60	<.01
Random Effect	σ^2			
u_0	.193			
u_1	.216			
e	.948			
Deviance				
AIC	2270.62			
BIC	2308.16			
-2LL	1127.31			

Table 23. Model comparisons for general life satisfaction and disengagement in the work domain.

Model	*df*	*AIC*	*BIC*	*-2LL*	*LR*	*p*
M_0	3	2271.59	2285.67	1132.80		
M_1	4	2271.42	2290.19	1131.71	2.17	.14
M_2	6	2268.64	2296.80	1128.32	6.79	.03
M_3	7	2268.58	2301.43	1127.29	2.05	.15
M_4	8	2265.69	2303.23	1124.85	4.89	.01
M_5	9	2249.69	2291.92	1115.85	18.00	<.01

Table 24. Model parameters for the prediction of general life satisfaction by disengagement in the work domain and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.018 (.047)	722	-.39	.70
DISENG	-.067 (.042)	722	-1.60	.11
OPPORT	.033 (.048)	80	.069	.49
DISENG × OPPORT	-.091 (.041)	722	-2.22	.01
Random Effect	σ^2			
u_0	.262			
u_1	.152			
e	.945			
Deviance				
AIC	2265.69			
BIC	2303.23			
-2LL	1124.85			

Table 25. Model comparisons for satisfaction with work and disengagement in the work domain.

Model	*df*	*AIC*	*BIC*	*-2LL*	*LR*	*p*
M_0	3	2270.02	2284.10	1132.01		
M_1	4	2268.47	2287.24	1130.24	3.55	.06
M_2	6	2269.42	2297.58	1128.71	3.05	.22
M_3	7	2271.11	2303.95	1128.55	.32	.57
M_4	8	2271.50	2309.04	1127.75	1.61	.10
M_5	9	2238.30	2280.52	1110.15	35.20	<.01

Table 26. Model comparisons for satisfaction with family and disengagement in the work domain.

Model	*df*	*AIC*	*BIC*	*-2LL*	*LR*	*p*
M_0	3	2283.40	2297.48	1138.70		
M_1	4	2281.45	2300.21	1136.72	3.96	.05
M_2	6	2285.47	2313.63	1136.74	.03	.99
M_3	7	2274.43	2307.27	1130.21	13.04	<.01
M_4	8	2275.10	2312.64	1129.55	1.33	.12
M_5	9	2276.04	2318.27	1129.02	1.06	.30

Table 27. Model comparisons for general life satisfaction and disengagement in the family domain.

Model	*df*	*AIC*	*BIC*	*-2LL*	*LR*	*p*
M_0	3	2271.59	2285.67	1132.80		
M_1	4	2271.49	2290.26	1131.75	2.10	.15
M_2	6	2267.40	2295.55	1127.70	8.09	.02
M_3	7	2267.78	2300.63	1126.89	1.62	.20
M_4	8	2266.41	2303.95	1125.21	3.37	.03
M_5	9	2267.56	2309.79	1124.78	.85	.36

Table 28. Model parameters for the prediction of general life satisfaction by disengagement in the family domain and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.018 (.047)	722	-.28	.70
DISENG	-.066 (.043)	722	-1.54	.12
OPPORT	.022 (.046)	80	.48	.63
DISENG × OPPORT	-.077 (.041)	722	-1.86	.03
Random Effect	σ^2			
u_0	.260			
u_1	.150			
e	.947			
Deviance				
AIC	2266.41			
BIC	2303.95			
-2LL	1125.21			

Table 29. Model comparisons for satisfaction with work and disengagement in the family domain.

Model	*df*	*AIC*	*BIC*	*-2LL*	*LR*	*p*
M_0	3	2270.02	2284.10	1132.01		
M_1	4	2267.61	2286.38	1129.80	4.42	.04
M_2	6	2267.35	2295.50	1127.67	4.26	.12
M_3	7	2267.51	2300.35	1126.75	1.84	.18
M_4	8	2268.15	2305.68	1126.07	1.36	.12
M_5	9	2266.77	2309.00	1124.39	3.38	.07

Table 30. Model comparisons for satisfaction with family and disengagement in the family domain.

Model	*df*	*AIC*	*BIC*	*-2LL*	*LR*	*p*
M_0	3	2283.40	2297.48	1138.70		
M_1	4	2282.93	2301.70	1137.47	2.47	.12
M_2	6	2286.96	2315.11	1137.48	.03	.99
M_3	7	2283.99	2316.83	1135.00	4.97	.03
M_4	8	2284.71	2322.25	1134.36	1.28	.13
M_5	9	2269.92	2312.18	1125.96	16.79	<.01

Table 31. Model parameters for the prediction of general life satisfaction by self-protection in the work domain, optimism, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.235 (.047)	718	-4.98	<.01
SELFPR	.038 (.047)	718	.79	.43
OPPORT	-.028 (.050)	80	-.56	.58
OPTIMI	.301 (.030)	718	10.17	<.01
SELFPR × OPPORT	.007 (.050)	718	.14	.89
SELFPR × OPTIMI	-.022 (.028)	718	-.79	.43
OPPORT × OPTIMI	.112 (.031)	718	3.61	<.01
SELFPR × OPPORT × OPTIMI	-.010 (.029)	718	-.35	.73

Random Effect	σ^2
u_0	.218
u_1	.168
u_2	.061
e	.870

Deviance	
AIC	2150.29
BIC	2220.68
-2LL	1060.15

Table 32. Model parameters for the prediction of satisfaction with work by self-protection in the work domain, optimism, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.197 (.048)	718	-4.11	<.01
SELFPR	-.009 (.045)	718	-.20	.84
OPPORT	-.009 (.051)	80	-.17	.86
OPTIMI	.208 (.032)	718	6.45	<.01
SELFPR × OPPORT	-.013 (.048)	718	-.27	.79
SELFPR × OPTIMI	.015 (.029)	718	.52	.61
OPPORT × OPTIMI	.055 (.034)	718	1.65	.10
SELFPR × OPPORT × OPTIMI	-.039 (.030)	718	-1.30	.19

Random Effect	σ^2
u_0	.208
u_1	.099
u_2	.093
e	.910

Deviance	
AIC	2222.54
BIC	2292.92
-2LL	1096.27

Table 33. Model parameters for the prediction of satisfaction with family by self-protection in the work domain, optimism, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.230 (.049)	718	-4.72	<.01
SELFPR	-.037 (.048)	718	-.77	.44
OPPORT	-.228 (.051)	80	-4.48	<.01
OPTIMI	.291 (.030)	718	9.81	<.01
SELFPR × OPPORT	.012 (.050)	718	.23	.81
SELFPR × OPTIMI	.008 (.028)	718	.28	.77
OPPORT × OPTIMI	.128 (.031)	718	4.15	<.01
SELFPR × OPPORT × OPTIMI	-.051 (.029)	718	-1.77	.08

Random Effect	σ^2
u_0	.224
u_1	.168
u_2	.066
e	.872

Deviance	
AIC	2159.02
BIC	2220.41
-2LL	1060.01

Table 34. Model parameters for the prediction of self-protection in the work domain by optimism and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	.015 (.058)	722	.26	.79
OPPORT	.013 (.060)	80	.22	.82
OPTIMI	-.052 (.034)	722	-1.53	.13
OPPORT × OPTIMI	-.086 (.036)	722	-2.40	.02
Random Effect	σ^2			
u_0	.338			
u_1	.128			
e	.904			
Deviance				
AIC	2227.35			
BIC	2264.88			
-2LL	1105.67			

Table 35. Model parameters for the prediction of general life satisfaction by self-protection in the family domain, optimism, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.253 (.046)	718	-5.45	<.01
SELFPR	.046 (.045)	718	1.04	.30
OPPORT	-.043 (.045)	80	-.96	.34
OPTIMI	.311 (.030)	718	10.30	<.01
SELFPR × OPPORT	.024 (.045)	718	.52	.60
SELFPR × OPTIMI	-.026 (.027)	718	-.95	.34
OPPORT × OPTIMI	.102 (.031)	718	3.31	<.01
SELFPR × OPPORT × OPTIMI	-.039 (.028)	718	-1.39	.16

Random Effect	σ^2
u_0	.212
u_1	.147
u_2	.076
e	.870

Deviance	
AIC	2151.96
BIC	2222.34
-2LL	1060.98

Table 36. Model parameters for the prediction of satisfaction with work by self-protection in the family domain, optimism, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.208 (.048)	718	-4.37	<.01
SELFPR	.007 (.045)	718	.16	.88
OPPORT	.014 (.047)	80	.29	.77
OPTIMI	.215 (.032)	718	6.66	<.01
SELFPR × OPPORT	-.002 (.046)	718	-.04	.97
SELFPR × OPTIMI	.019 (.028)	718	.67	.50
OPPORT × OPTIMI	.055 (.032)	718	1.68	.09
SELFPR × OPPORT × OPTIMI	-.057 (.030)	718	-1.91	.06

Random Effect	σ^2
u_0	.205
u_1	.113
u_2	.094
e	.907

Deviance	
AIC	2219.76
BIC	2290.14
-2LL	1094.88

Table 37. Model parameters for the prediction of satisfaction with family by self-protection in the family domain, optimism, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.255 (.051)	718	-5.03	<.01
SELFPR	-.034 (.049)	718	-.70	.48
OPPORT	-.155 (.050)	80	-3.13	<.01
OPTIMI	.306 (.030)	718	10.09	<.01
SELFPR × OPPORT	-.035 (.050)	718	-.70	.48
SELFPR × OPTIMI	.004 (.028)	718	.13	.89
OPPORT × OPTIMI	.100 (.031)	718	3.19	<.01
SELFPR × OPPORT × OPTIMI	-.035 (.029)	718	-1.19	.23

Random Effect	σ^2
u_0	.253
u_1	.191
u_2	.080
e	.870

Deviance	
AIC	2156.55
BIC	2226.94
-2LL	1063.28

Table 38. Model parameters for the prediction of self-protection in the family domain by optimism and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	.031 (.055)	722	.56	.58
OPPORT	-.062 (.034)	722	-1.80	.07
OPTIMI	.064 (.054)	80	1.19	.24
OPPORT × OPTIMI	-.099 (.035)	722	-2.83	<.01
Random Effect	σ^2			
u_0	.317			
u_1	.132			
e	.908			
Deviance				
AIC	2230.70			
BIC	2268.24			
-2LL	1107.35			

Table 39. Model parameters for the prediction of general life satisfaction by disengagement in the work domain, optimism, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.234 (.045)	718	-5.19	<.01
DISENG	-.047 (.047)	718	-1.00	.32
OPPORT	-.025 (.048)	80	-.51	.61
OPTIMI	.300 (.030)	718	10.15	<.01
DISENG × OPPORT	.003 (.048)	718	.07	.94
DISENG × OPTIMI	.025 (.029)	718	.88	.38
OPPORT × OPTIMI	.105 (.031)	718	3.36	<.01
DISENG × OPPORT × OPTIMI	-.038 (.028)	718	-1.38	.17

Random Effect	σ^2
u_0	.186
u_1	.153
u_2	.068
e	.873

Deviance	
AIC	2151.00
BIC	2221.38
-2LL	1060.50

Table 40. Model parameters for the prediction of satisfaction with work by disengagement in the work domain, optimism, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.193 (.048)	718	-4.02	<.01
DISENG	-.104 (.048)	718	-2.16	.03
OPPORT	.002 (.051)	80	.05	.96
OPTIMI	.211 (.032)	718	6.51	<.01
DISENG × OPPORT	.023 (.048)	718	.48	.63
DISENG × OPTIMI	.057 (.030)	718	1.91	.06
OPPORT × OPTIMI	.048 (.034)	718	1.41	.16
DISENG × OPPORT × OPTIMI	-.037 (.029)	718	-1.25	.21

Random Effect	σ^2
u_0	.207
u_1	.124
u_2	.100
e	.907

Deviance	
AIC	2220.69
BIC	2291.07
-2LL	1095.35

Table 41. Model parameters for the prediction of satisfaction with family by disengagement in the work domain, optimism, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.220 (.048)	718	-4.58	<.01
DISENG	-.044 (.043)	718	-1.01	.31
OPPORT	-.232 (.051)	80	-4.54	<.01
OPTIMI	.297 (.030)	718	9.98	<.01
DISENG × OPPORT	.042 (.044)	718	.95	.34
DISENG × OPTIMI	.013 (.029)	718	.44	.66
OPPORT × OPTIMI	.120 (.031)	718	3.86	<.01
DISENG × OPPORT × OPTIMI	-.041 (.028)	718	-1.50	.14

Random Effect	σ^2
u_0	.219
u_1	.000
u_2	.069
e	.888

Deviance	
AIC	2154.84
BIC	2225.22
-2LL	1062.42

Table 42. Model parameters for the prediction of disengagement in the work domain by optimism and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	.031 (.064)	722	.48	.63
OPPORT	.081 (.066)	80	1.23	.22
OPTIMI	-.066 (.033)	722	-2.04	.04
OPPORT × OPTIMI	-.086 (.034)	722	-2.51	.01
Random Effect	σ^2			
u_0	.411			
u_1	.102			
e	.892			
Deviance				
AIC	2212.89			
BIC	2250.43			
-2LL	1098.45			

Table 43. Model parameters for the prediction of general life satisfaction by disengagement in the family domain, optimism, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.240 (.045)	718	-5.36	<.01
SELFPR	-.030 (.045)	718	-.63	.53
OPPORT	-.030 (.044)	80	-.67	.50
OPTIMI	.306 (.030)	718	10.15	<.01
SELFPR × OPPORT	.002 (.046)	718	.04	.97
SELFPR × OPTIMI	.025 (.028)	718	.87	.38
OPPORT × OPTIMI	.088 (.031)	718	2.82	<.01
SELFPR × OPPORT × OPTIMI	-.036 (.028)	718	-1.25	.21

Random Effect	σ^2
u_0	.185
u_1	.156
u_2	.081
e	.873

Deviance	
AIC	2153.95
BIC	2224.33
-2LL	1061.97

Table 44. Model parameters for the prediction of satisfaction with work by disengagement in the family domain, optimism, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.194 (.047)	718	-4.11	<.01
DISENG	-.089 (.049)	718	-1.83	.07
OPPORT	.024 (.046)	80	.52	.60
OPTIMI	.211 (.032)	718	6.58	<.01
DISENG × OPPORT	.015 (.047)	718	.32	.75
DISENG × OPTIMI	.046 (.030)	718	1.55	.12
OPPORT × OPTIMI	.042 (.033)	718	1.27	.21
DISENG × OPPORT × OPTIMI	-.044 (.030)	718	-1.48	.14

Random Effect	σ^2
u_0	.198
u_1	.144
u_2	.098
e	.906

Deviance	
AIC	2217.47
BIC	2287.85
-2LL	1093.74

Table 45. Model parameters for the prediction of satisfaction with family by disengagement in the family domain, optimism, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.245 (.051)	718	-4.76	<.01
DISENG	-.017 (.044)	718	-.38	.71
OPPORT	-.164 (.051)	80	-3.24	<.01
OPTIMI	.307 (.031)	718	10.04	<.01
DISENG × OPPORT	.030 (.044)	718	0.68	.50
DISENG × OPTIMI	.009 (.029)	718	.030	.76
OPPORT × OPTIMI	.101 (.032)	718	3.16	<.01
DISENG × OPPORT × OPTIMI	-.042 (.029)	718	-1.44	.15

Random Effect	σ^2
u_0	.266
u_1	.065
u_2	.090
e	.886

Deviance	
AIC	2162.10
BIC	2232.48
-2LL	1066.05

Table 46. Model parameters for the prediction of disengagement in the family domain by optimism and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	.042 (.065)	722	.65	.51
OPPORT	.044 (.062)	80	.72	.47
OPTIMI	-.083 (.029)	722	-2.84	<.01
OPPORT × OPTIMI	-.066 (.030)	722	-2.20	.03
Random Effect	σ^2			
u_0	.440			
u_1	.030			
e	.880			
Deviance				
AIC	2190.57			
BIC	228.10			
-2LL	1087.28			

Table 47. Model parameters for the prediction of general life satisfaction by self-protection in the work domain, civic engagement, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.025 (.047)	718	-.53	.60
SELFPR	-.025 (.045)	718	-.57	.57
OPPORT	-.028 (.047)	80	.59	.55
CIVENG	.116 (.036)	718	3.18	<.01
SELFPR × OPPORT	-.051 (.043)	718	-1.16	.24
SELFPR × CIVENG	.046 (.036)	718	1.29	.20
OPPORT × CIVENG	.017 (.035)	718	.49	.62
SELFPR × OPPORT × CIVENG	-.022 (.033)	718	-.68	.25

Random Effect	σ^2
u_0	.254
u_1	.197
e	.932

Deviance	
AIC	2259.65
BIC	2315.96
-2LL	1117.83

Table 48. Model parameters for the prediction of satisfaction with work by self-protection in the work domain, civic engagement, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.050 (.049)	718	-1.03	.30
SELFPR	-.002 (.037)	718	-.04	.96
OPPORT	.017 (.050)	80	.35	.73
CIVENG	.110 (.036)	718	3.03	<.01
SELFPR × OPPORT	-.092 (.034)	718	-2.64	<.01
SELFPR × CIVENG	.093 (.035)	718	2.65	<.01
OPPORT × CIVENG	.020 (.035)	718	.56	.57
SELFPR × OPPORT × CIVENG	-.050 (.032)	718	-1.53	.06

Random Effect	σ^2
u_0	.282
u_1	.060
e	.938

Deviance	
AIC	2260.15
BIC	2316.46
-2LL	1118.08

Table 49. Model parameters for the prediction of satisfaction with family by self-protection in the work domain, civic engagement, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.035 (.041)	718	-.87	.38
SELFPR	-.066 (.046)	718	-1.44	.15
OPPORT	-.163 (.041)	80	-3.96	<.01
CIVENG	.125 (.036)	718	3.47	<.01
SELFPR × OPPORT	-.083 (.045)	718	-1.84	.07
SELFPR × CIVENG	.040 (.036)	718	1.12	.26
OPPORT × CIVENG	.087 (.035)	718	2.50	.01
SELFPR × OPPORT × CIVENG	-.050 (.033)	718	-1.51	.07

Random Effect	σ^2
u_0	.162
u_1	.216
e	.933

Deviance	
AIC	2249.20
BIC	2305.50
-2LL	1112.60

Table 50. Model parameters for the prediction of self-protection in the work domain by civic engagement and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.004 (.055)	722	-.07	.94
OPPORT	-.038 (.056)	80	-.67	.50
CIVENG	-.019 (.037)	722	-.51	.61
OPPORT × CIVENG	-.101 (.036)	722	-2.84	<.01
Random Effect	σ^2			
u_0	.365			
u_1	.078			
e	.913			
Deviance				
AIC	2233.32			
BIC	2270.86			
-2LL	1108.66			

Table 51. Model parameters for the prediction of general life satisfaction by self-protection in the family domain, civic engagement, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.018 (.048)	718	-.38	.70
SELFPR	-.023 (.041)	718	-.57	.57
OPPORT	.017 (.046)	80	.37	.71
CIVENG	.120 (.036)	718	3.32	<.01
SELFPR × OPPORT	-.067 (.041)	718	-1.64	.10
SELFPR × CIVENG	.043 (.035)	718	.122	.22
OPPORT × CIVENG	-.030 (.036)	718	-.82	.41
SELFPR × OPPORT × CIVENG	-.056 (.036)	718	-1.54	.06

Random Effect	σ^2
u_0	.271
u_1	.145
e	.934

Deviance	
AIC	2259.10
BIC	2315.40
-2LL	1117.55

Table 52. Model parameters for the prediction of satisfaction with work by self-protection in the family domain, civic engagement, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.045 (.049)	718	-.91	.36
SELFPR	.008 (.038)	718	.21	.84
OPPORT	.047 (.048)	80	.98	.33
CIVENG	.115 (.036)	718	3.21	<.01
SELFPR × OPPORT	-.088 (.037)	718	-.235	.02
SELFPR × CIVENG	.078 (.035)	718	2.22	.03
OPPORT × CIVENG	-.017 (.036)	718	-.47	.64
SELFPR × OPPORT × CIVENG	-.067 (.036)	718	-.188	.03

Random Effect	σ^2
u_0	.288
u_1	.083
e	.936

Deviance	
AIC	2259.82
BIC	2316.12
-2LL	1117.91

Table 53. Model parameters for the prediction of satisfaction with family by self-protection in the family domain, civic engagement, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.032 (.044)	718	-.72	.47
SELFPR	-.079 (.046)	718	-1.72	.09
OPPORT	-.106 (.043)	80	-2.47	.02
CIVENG	.134 (.036)	718	3.72	<.01
SELFPR × OPPORT	-.113 (.046)	718	-2.44	.01
SELFPR × CIVENG	.032 (.036)	718	.90	.37
OPPORT × CIVENG	.016 (.036)	718	.44	.66
SELFPR × OPPORT × CIVENG	-.055 (.036)	718	-1.51	.07

Random Effect	σ^2
u_0	.219
u_1	.215
e	.932

Deviance	
AIC	2260.36
BIC	2316.66
-2LL	1118.18

Table 54. Model parameters for the prediction of self-protection in the family domain by civic engagement and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.000 (.053)	722	-.01	.99
OPPORT	.005 (.051)	80	.10	.92
CIVENG	-.032 (.040)	722	-.81	.42
OPPORT × CIVENG	-.085 (.040)	722	-2.12	.02
Random Effect	σ^2			
u_0	.342			
u_1	.145			
e	.916			
Deviance				
AIC	2240.88			
BIC	2278.42			
-2LL	1112.44			

Table 55. Model parameters for the prediction of general life satisfaction by disengagement in the work domain, civic engagement, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.016 (.047)	718	-.33	.74
DISENG	-.059 (.041)	718	-1.45	.15
OPPORT	.024 (.048)	80	.51	.61
CIVENG	.122 (.036)	718	3.38	<.01
DISENG × OPPORT	-.079 (.040)	718	-1.99	.05
DISENG × CIVENG	.041 (.035)	718	1.15	.25
OPPORT × CIVENG	-.001 (.035)	718	-.02	.98
DISENG × OPPORT × CIVENG	-.006 (.032)	718	-.18	.86

Random Effect	σ^2
u_0	.259
u_1	.132
e	.939

Deviance	
AIC	2261.58
BIC	2317.89
-2LL	1118.79

Table 56. Model parameters for the prediction of satisfaction with work by disengagement in the work domain, civic engagement, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.041 (.049)	718	-.83	.41
DISENG	-.060 (.039)	718	-1.53	.13
OPPORT	.015 (.050)	80	.30	.76
CIVENG	.121 (.036)	718	3.38	<.01
DISENG × OPPORT	-.043 (.038)	718	-1.13	.26
DISENG × CIVENG	.074 (.035)	718	2.13	.03
OPPORT × CIVENG	.000 (.035)	718	.01	.99
DISENG × OPPORT × CIVENG	-.024 (.033)	718	-.72	.23

Random Effect	σ^2
u_0	.282
u_1	.102
e	.938

Deviance	
AIC	2264.30
BIC	2320.61
-2LL	1120.15

Table 57. Model parameters for the prediction of satisfaction with family by disengagement in the work domain, civic engagement, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.020 (.041)	718	-.48	.63
DISENG	-.056 (.036)	718	-1.58	.11
OPPORT	-.163 (.042)	80	-3.91	<.01
CIVENG	.132 (.036)	718	3.71	<.01
DISENG × OPPORT	-.023 (.034)	718	-.66	.51
DISENG × CIVENG	.033 (.034)	718	.96	.34
OPPORT × CIVENG	.083 (.035)	718	2.39	.02
DISENG × OPPORT × CIVENG	-.055 (.032)	718	-1.72	.04

Random Effect	σ^2
u_0	.179
u_1	.004
e	.953

Deviance	
AIC	2257.64
BIC	2313.95
-2LL	1116.82

Table 58. Model parameters for the prediction of disengagement in the work domain by civic engagement and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	.003 (.059)	722	.06	.95
OPPORT	.034 (.060)	80	.56	.57
CIVENG	-.041 (.034)	722	-1.19	.23
OPPORT × CIVENG	-.118 (.033)	722	-3.54	<.01
Random Effect	σ^2			
u_0	.411			
u_1	.012			
e	.898			
Deviance				
AIC	2214.41			
BIC	2251.95			
-2LL	1099.20			

Table 59. Model parameters for the prediction of general life satisfaction by disengagement in the family domain, civic engagement, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.012 (.047)	718	-.25	.80
DISENG	-.060 (.041)	718	-1.48	.14
OPPORT	.010 (.046)	80	.22	.83
CIVENG	.127 (.036)	718	3.54	<.01
DISENG × OPPORT	-.069 (.040)	718	-1.74	.08
DISENG × CIVENG	.049 (.035)	718	1.39	.16
OPPORT × CIVENG	-.038 (.037)	718	-1.05	.29
DISENG × OPPORT × CIVENG	-.039 (.034)	718	-1.12	.26
Random Effect	σ^2			
u_0	.259			
u_1	.119			
e	.939			
Deviance				
AIC	2259.12			
BIC	2315.43			
-2LL	1117.56			

Table 60. Model parameters for the prediction of satisfaction with work by disengagement in the family domain, civic engagement, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.039 (.048)	718	-.81	.42
DISENG	-.078 (.039)	718	-1.99	.05
OPPORT	.042 (.047)	80	.89	.37
CIVENG	.122 (.036)	718	3.42	<.01
DISENG × OPPORT	-.042 (.039)	718	-1.09	.28
DISENG × CIVENG	.095 (.035)	718	2.73	<.01
OPPORT × CIVENG	-.023 (.036)	718	-.64	.52
DISENG × OPPORT × CIVENG	-.057 (.034)	718	-1.67	.05

Random Effect	σ^2
u_0	.272
u_1	.095
e	.936

Deviance	
AIC	2256.40
BIC	2312.70
-2LL	1116.20

Table 61. Model parameters for the prediction of satisfaction with family by disengagement in the family domain, civic engagement, and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.019 (.045)	718	-.42	.67
DISENG	-.049 (.036)	718	-1.35	.18
OPPORT	-.110 (.044)	80	-2.49	.01
CIVENG	.141 (.036)	718	3.94	<.01
DISENG × OPPORT	-.023 (.036)	718	-.64	.52
DISENG × CIVENG	.034 (.034)	718	1.00	.32
OPPORT × CIVENG	.015 (.036)	718	.42	.68
DISENG × OPPORT × CIVENG	-.070 (.033)	718	-2.05	.02

Random Effect	σ^2
u_0	.233
u_1	.003
e	.953

Deviance	
AIC	2270.37
BIC	2326.68
-2LL	1123.19

Table 62. Model parameters for the prediction of disengagement in the family domain by civic engagement and opportunity structures.

Fixed Effect	β (*S.E.*)	df	*t*	*p*
INTERCEPT	-.012 (.061)	722	-.21	.83
OPPORT	.010 (.057)	80	.17	.86
CIVENG	-.028 (.040)	722	-.70	.48
OPPORT × CIVENG	-.057 (.040)	722	-1.42	.08
Random Effect	σ^2			
u_0	.426			
u_1	.162			
e	.873			
Deviance				
AIC	2193.78			
BIC	2231.32			
-2LL	1088.89			

Table 63. Overview of the results.

	Self-protection		Disengagement	
	Work	Family	Work	Family
Hypothesis 1				
General Life Satisfaction	-	X	X	X
Satisfaction with Work	X	X	-	-
Satisfaction with Family	X	X	-	-
Hypothesis 2a				
General Life Satisfaction	-	-	-	-
Satisfaction with Work	-	-	-	-
Satisfaction with Family	-	-	-	-
Hypothesis 2b	X	X	X	X
Hypothesis 3a				
General Life Satisfaction	-	-	-	-
Satisfaction with Work	-	X	-	X
Satisfaction with Family	-	-	X	X
Hypothesis 3b	X	X	X	-

Note: Hypotheses confirmed are marked with a “X”.

FIGURES

Figure 1. Hypothesized association between developmental barriers and secondary control strategies.

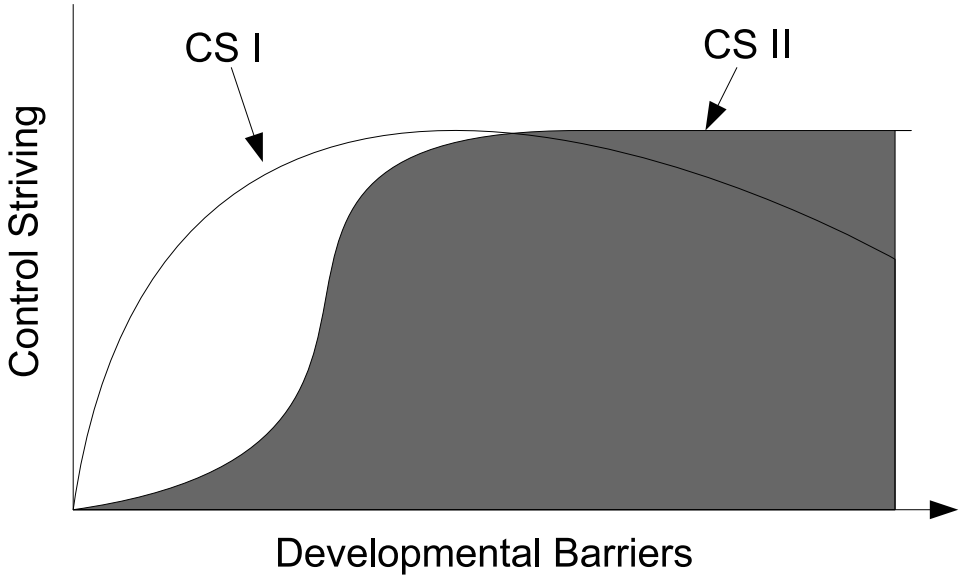


Figure 2. Distribution of highly endorsed demands in the work and family domains.

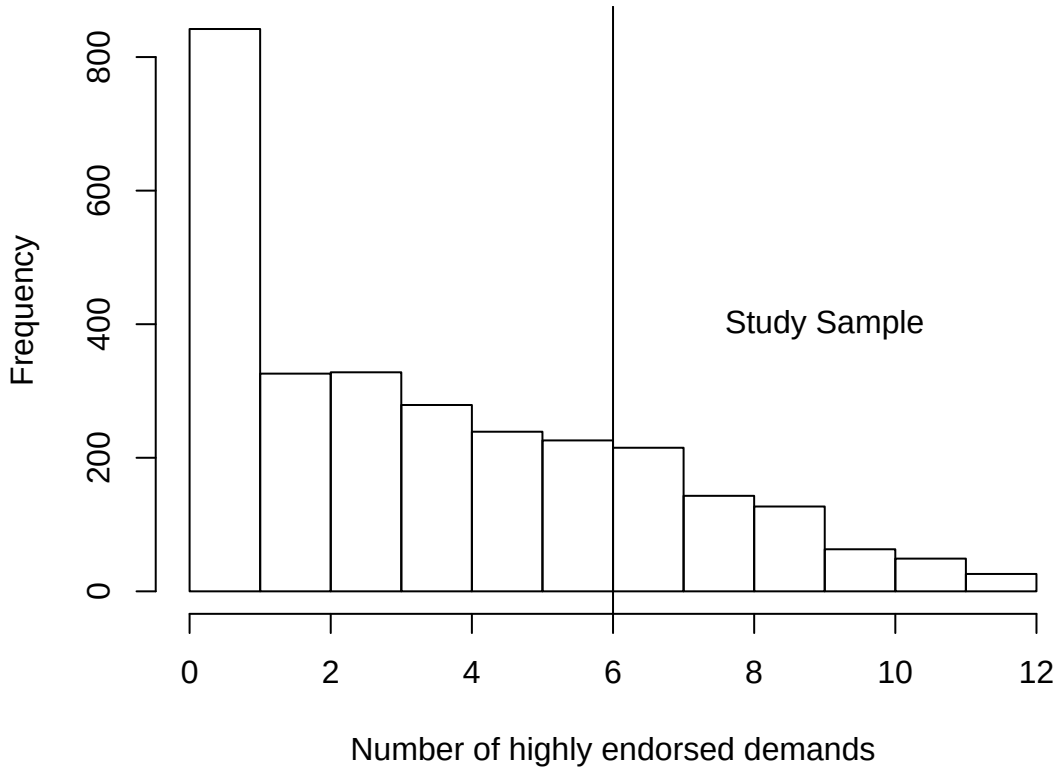
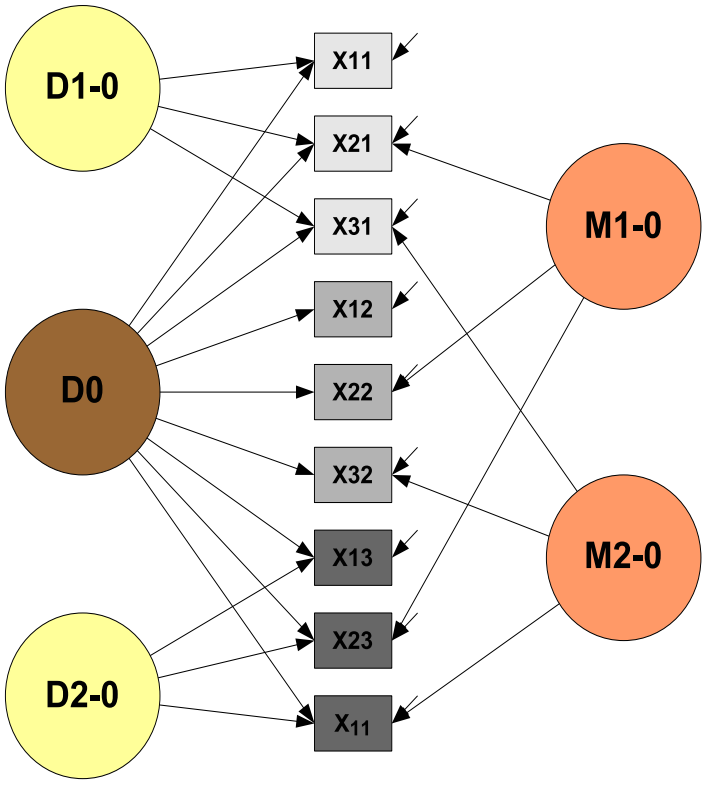


Figure 3. Conceptual measurement model for one control strategy scale.



Note. Covariance structure between latent variables omitted for clarity. The covariance structure between latent variables is saturated.

Figure 4.Correlation of self-protection at work and satisfaction with work conditional on work related opportunity structures.

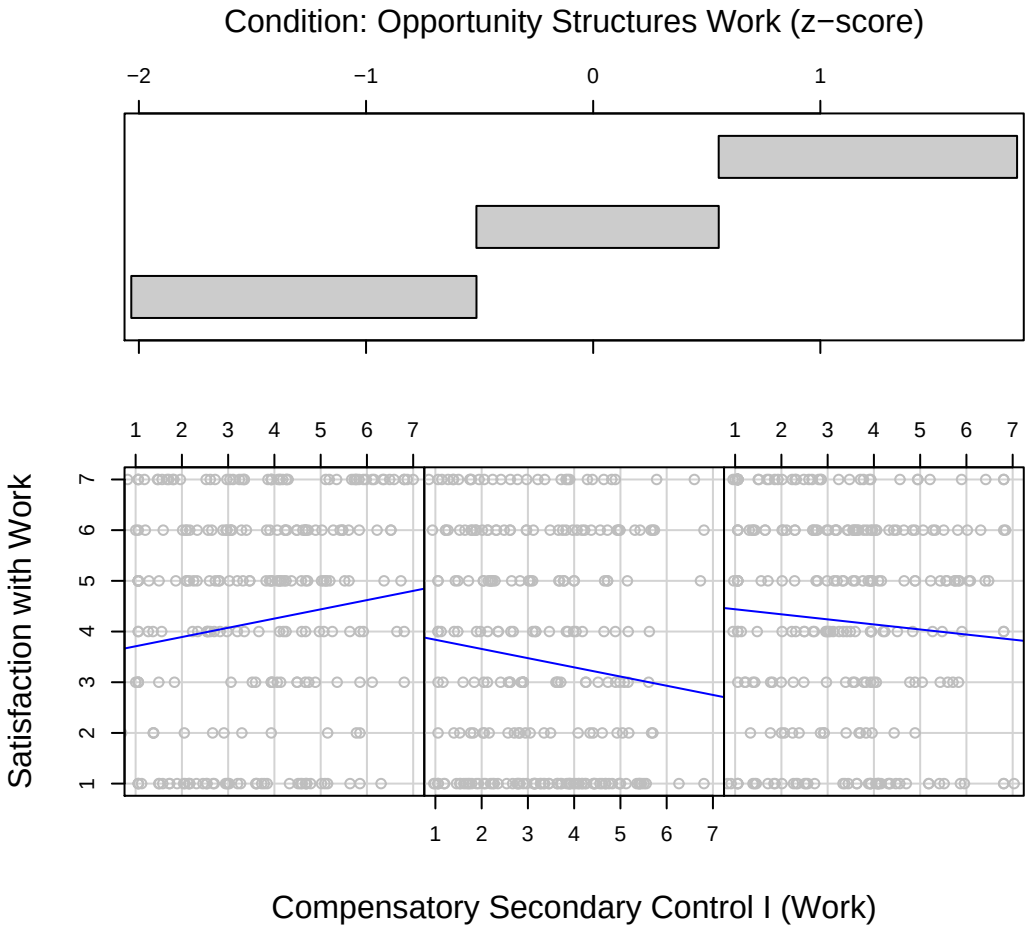


Figure 5. Correlation of self-protection at work and satisfaction with family life conditional on work-related opportunity structures.

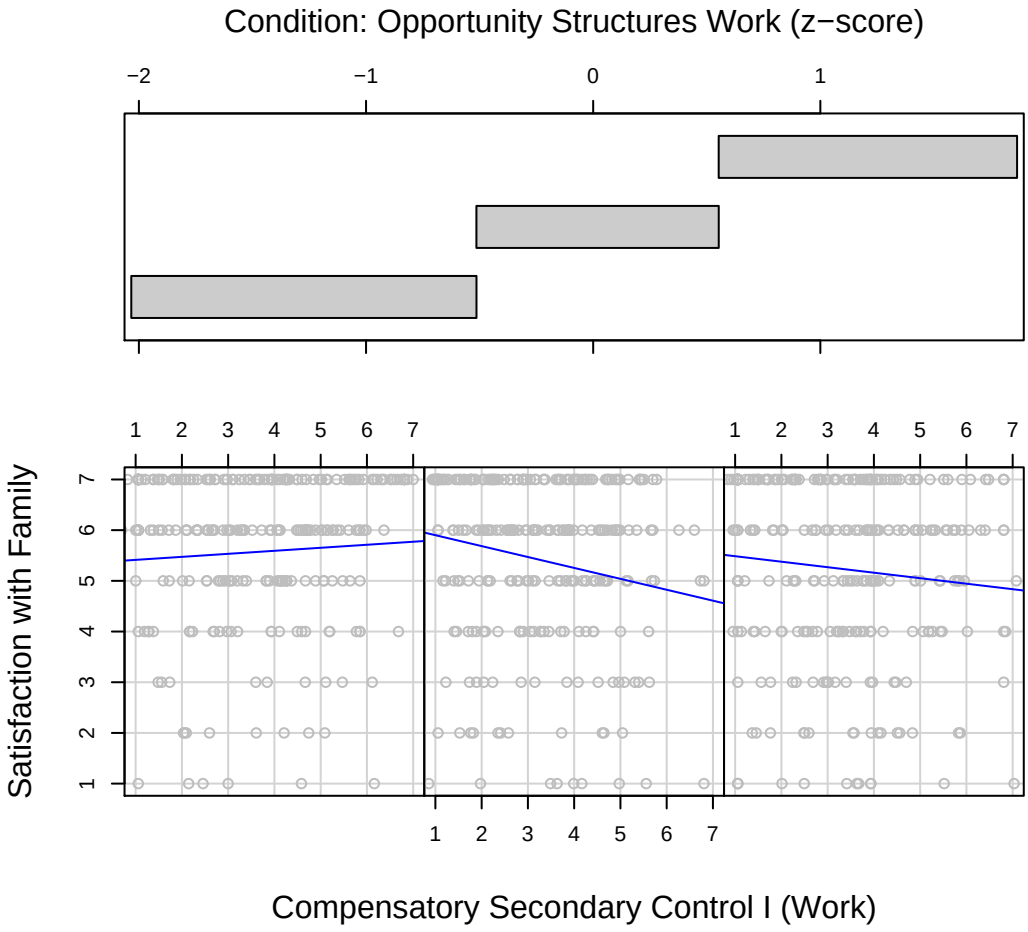


Figure 6. Correlation of self-protection in family and general life satisfaction conditional on family related opportunity structures.

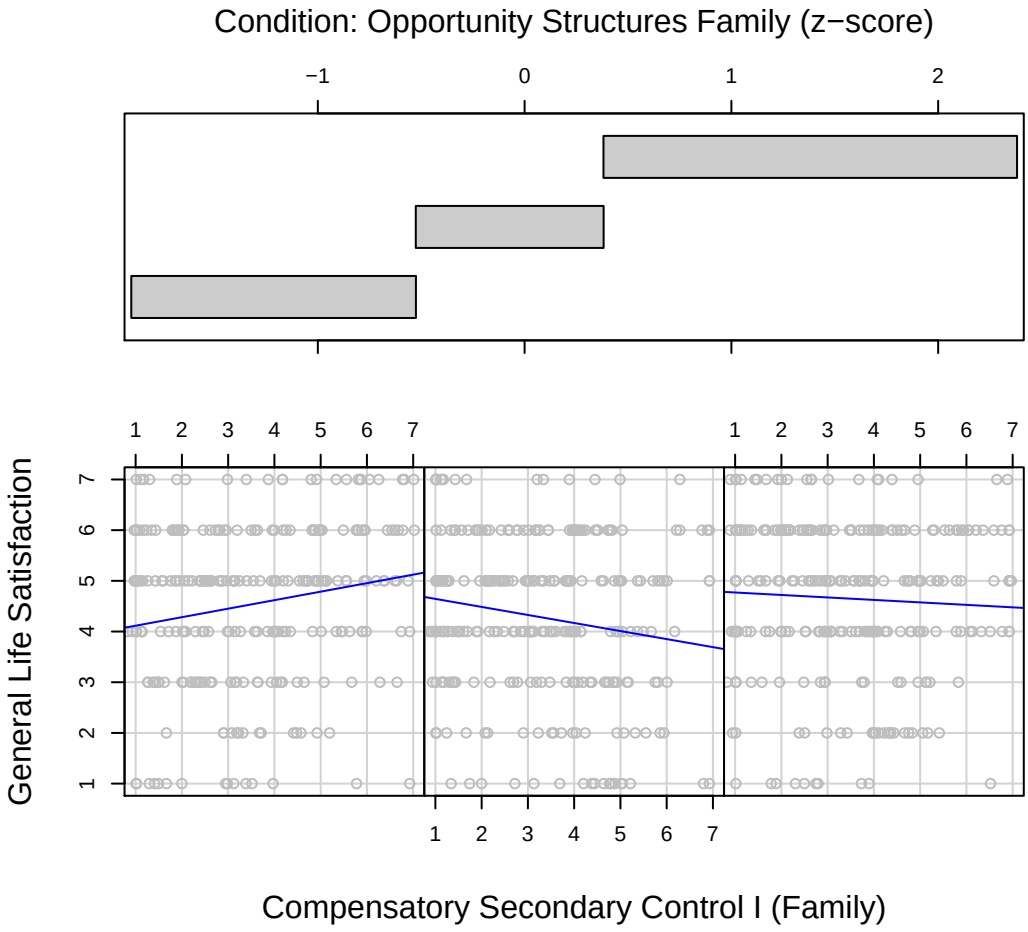


Figure 7. Correlation of self-protection in family and satisfaction with work conditional on family related opportunity structures.

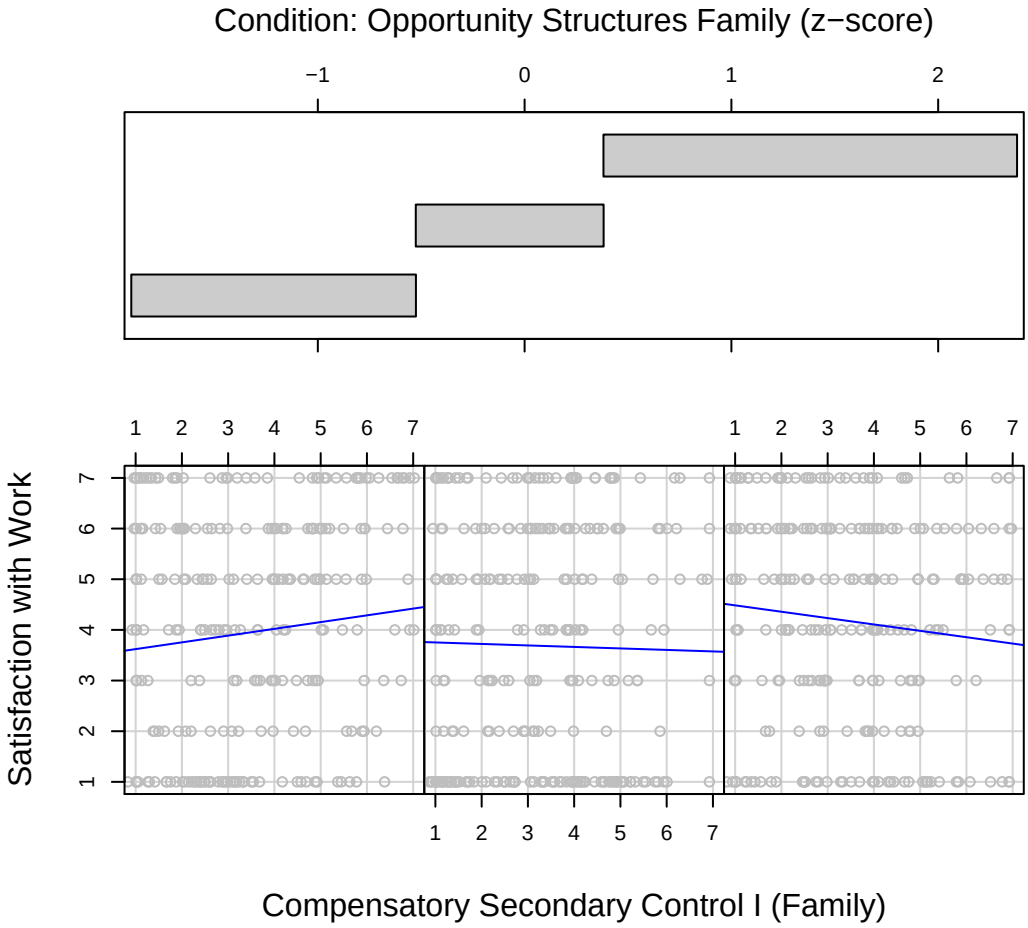


Figure 8. Correlation of self-protection in family and satisfaction with family life conditional on family related opportunity structures.

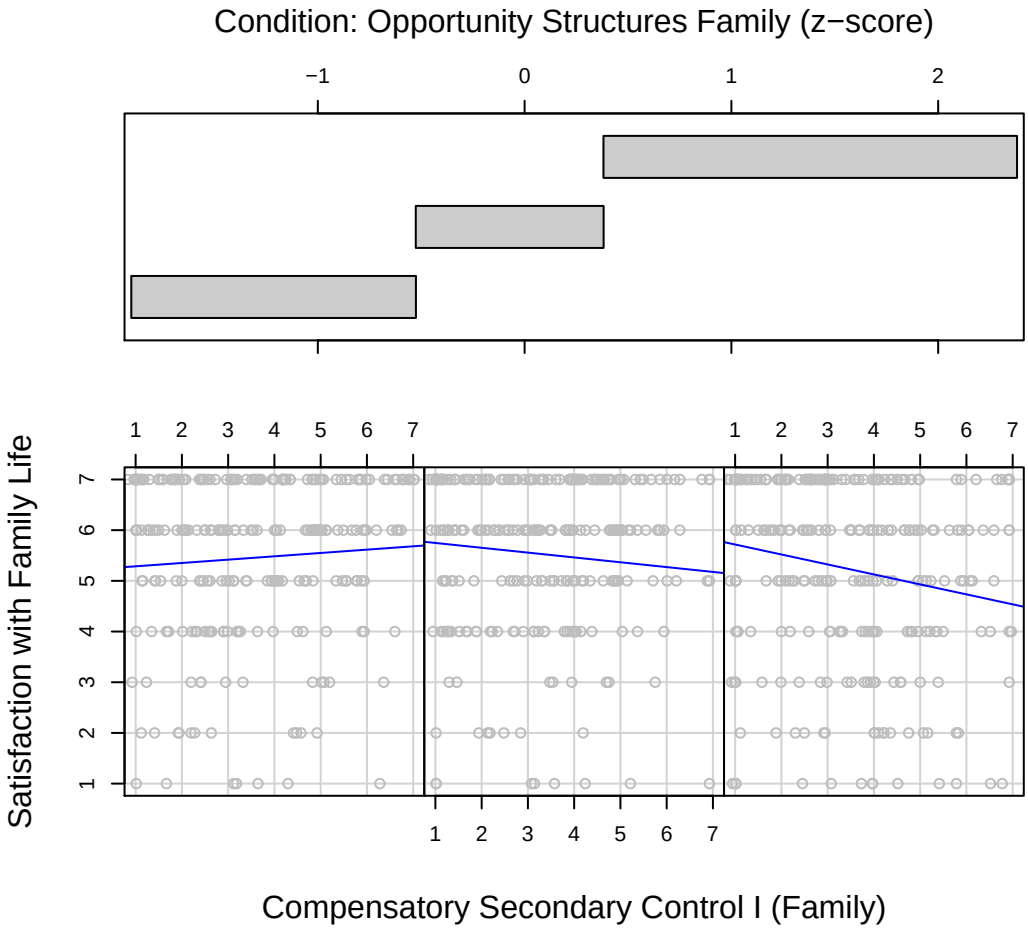


Figure 9. Correlation of disengagement at work and general life satisfaction conditional on work related opportunity structures.

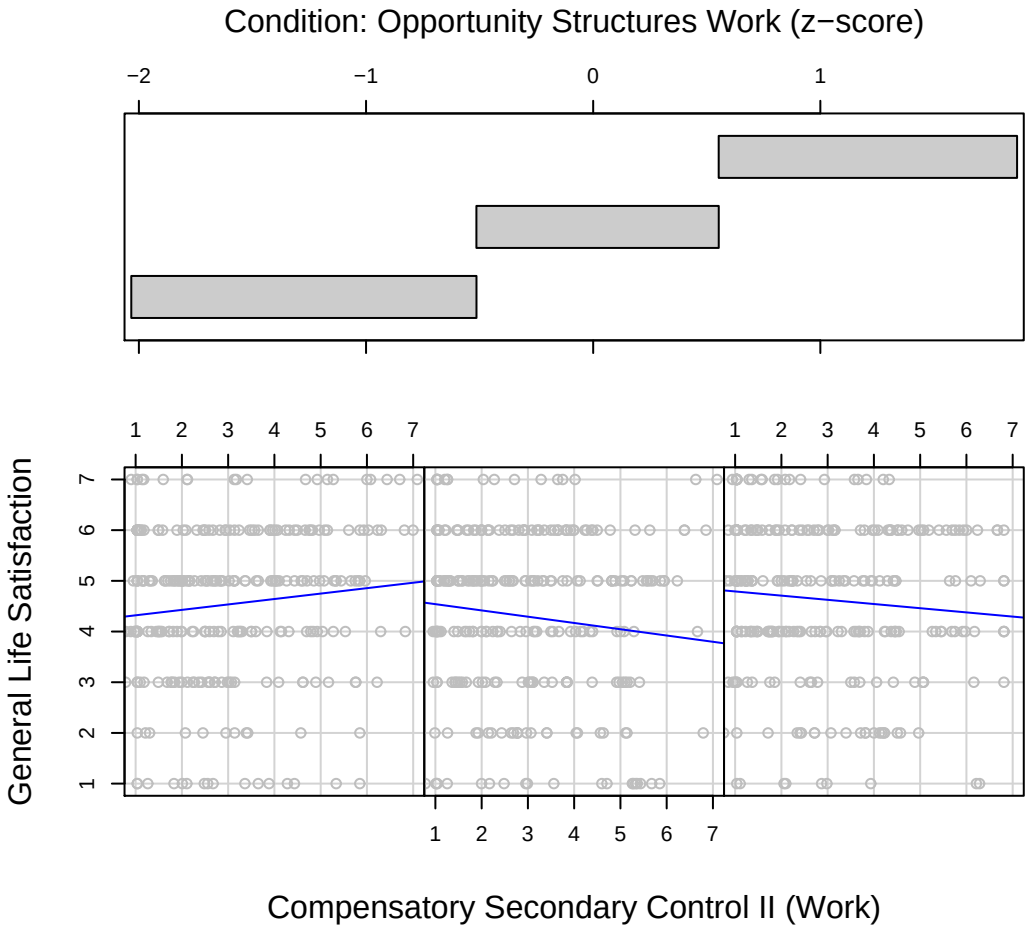


Figure 10. Correlation of disengagement in family and general life satisfaction conditional on family related opportunity structures.

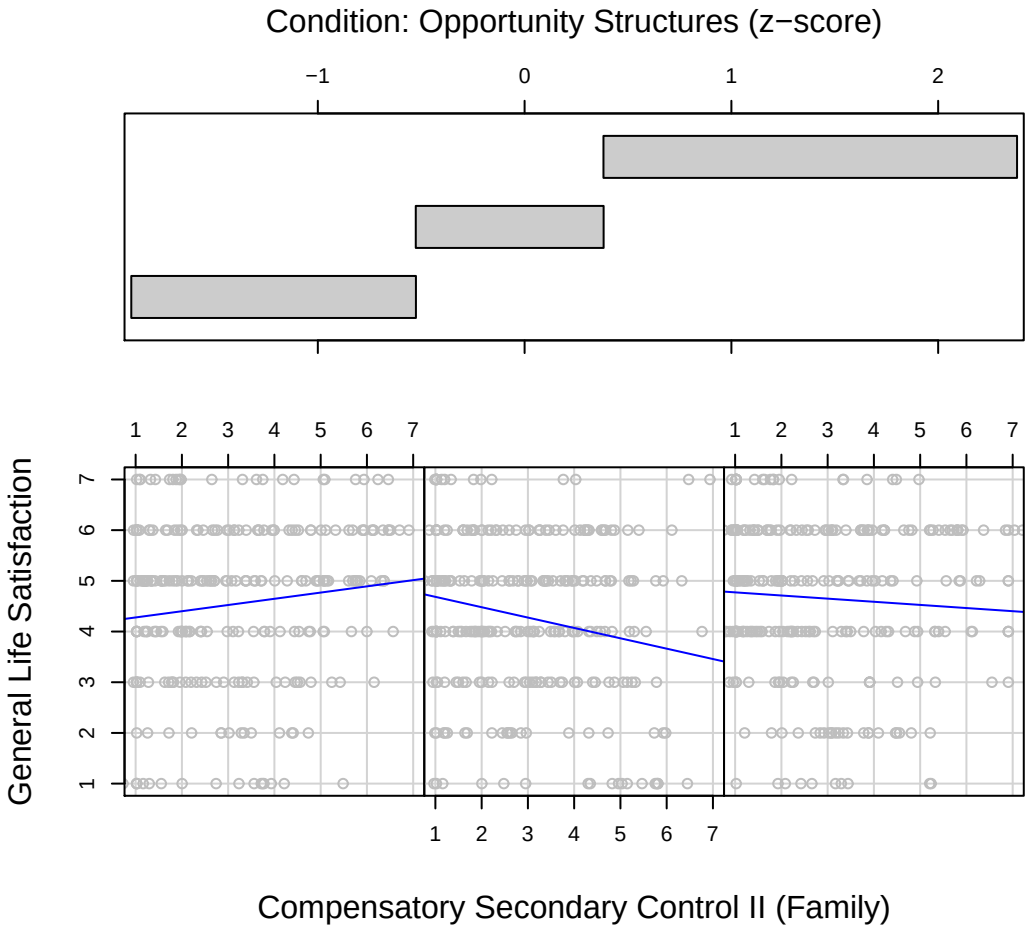


Figure 11. Correlation of optimism and self-protection at work conditional on work related opportunity structures.

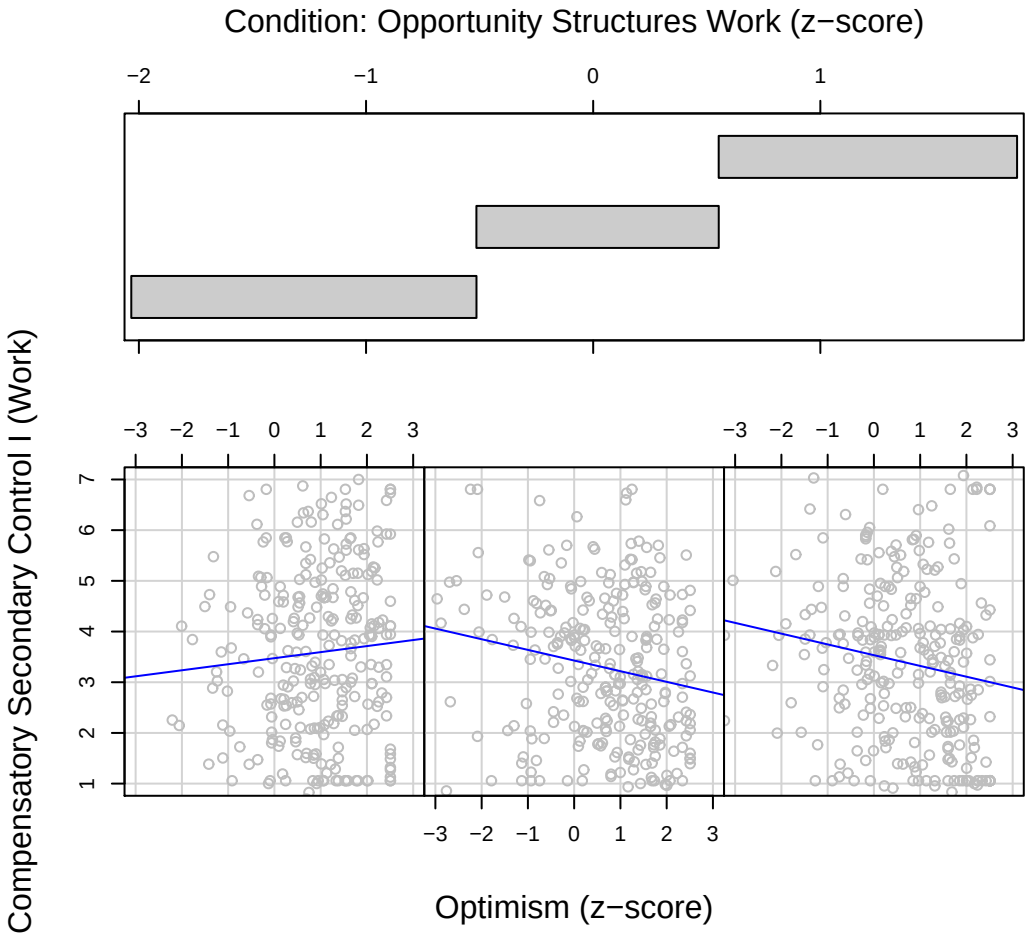


Figure 12. Correlation of optimism and self-protection in family conditional on family related opportunity structures.

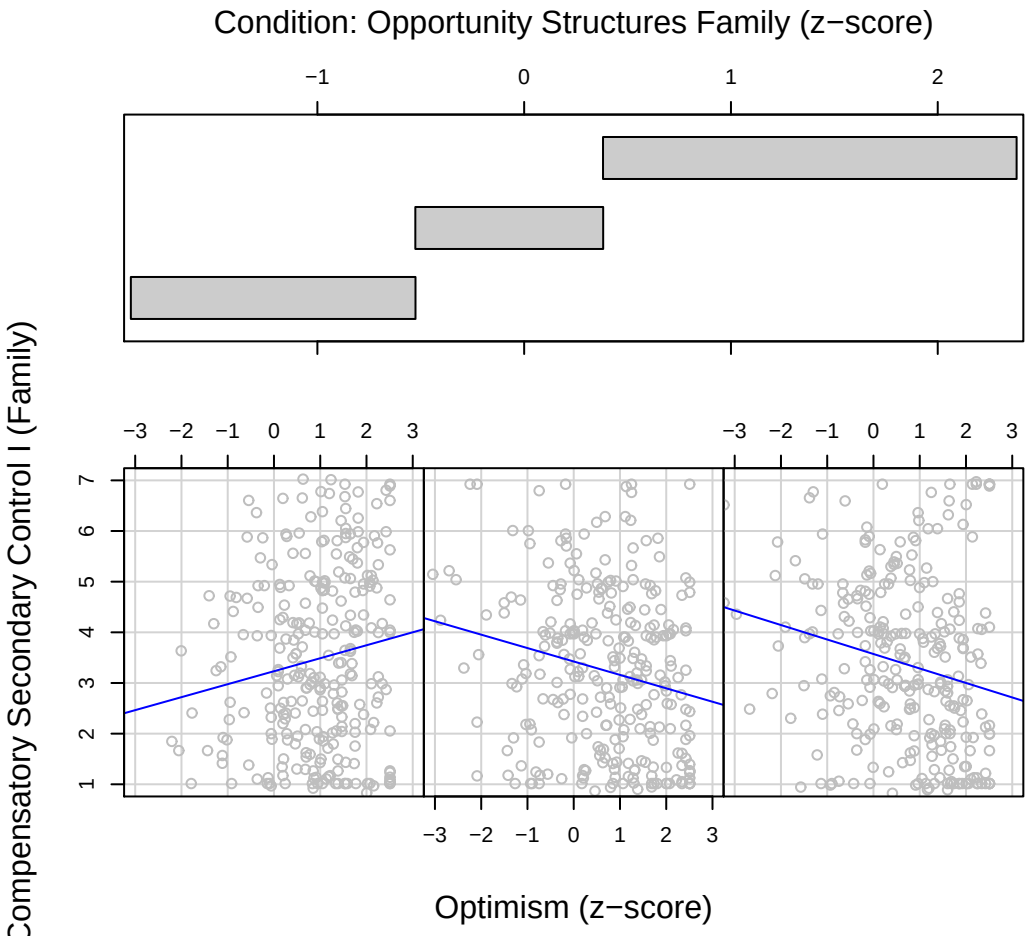


Figure 13. Correlation of optimism and disengagement at work conditional on work related opportunity structures.

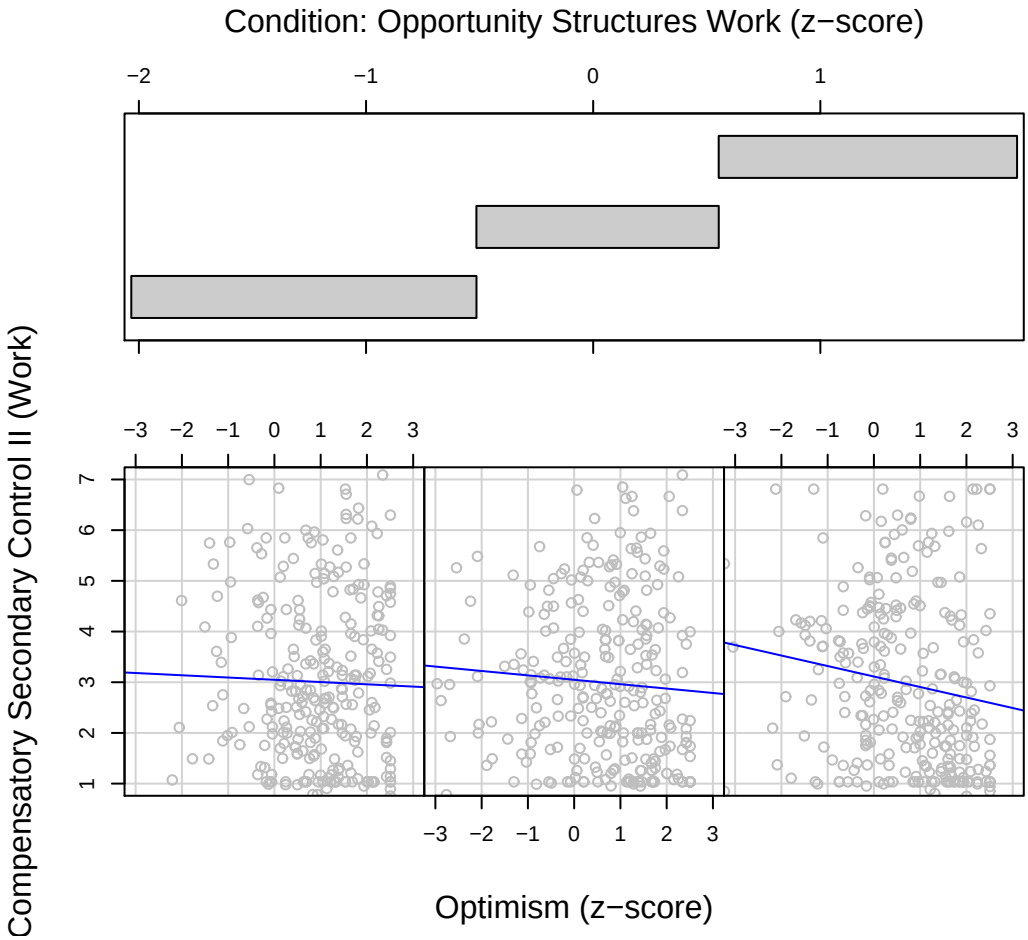


Figure 14. Correlation of optimism and disengagement in family conditional on family related opportunity structures.

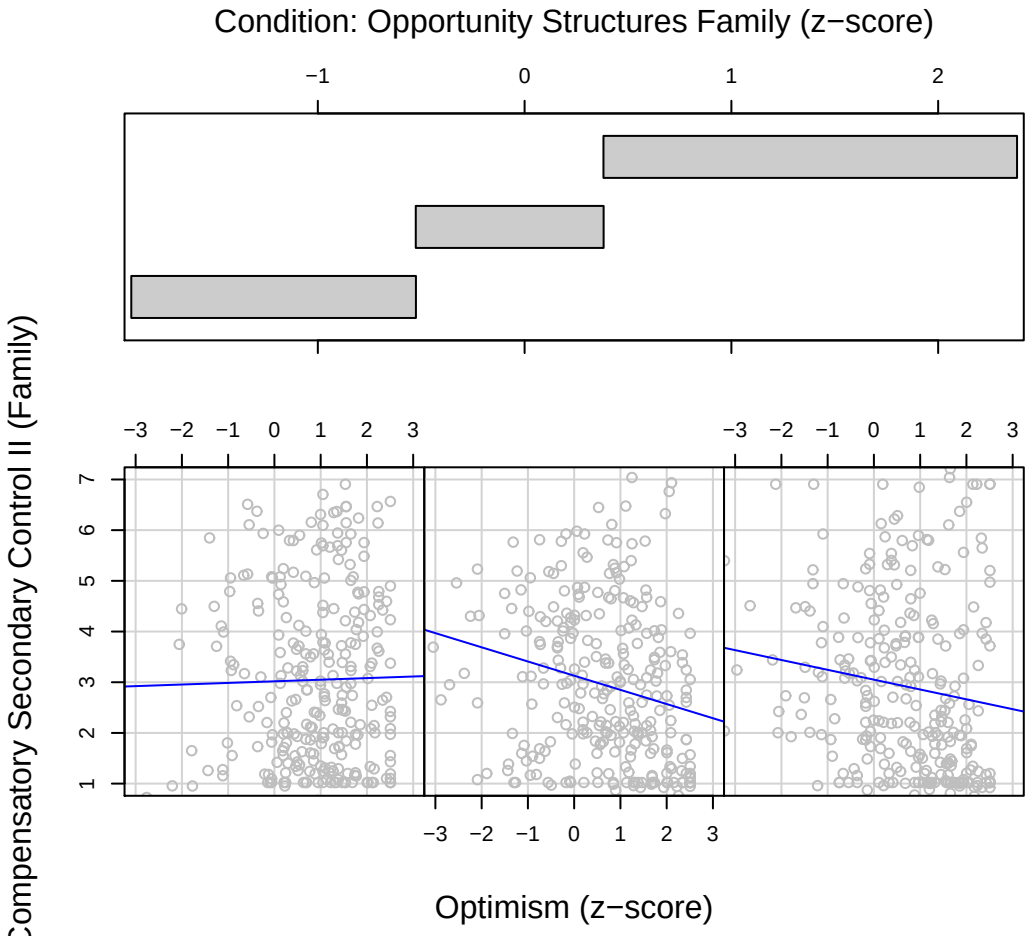


Figure 15. Correlation of civic engagement and self-protection in family conditional on family related opportunity structures.

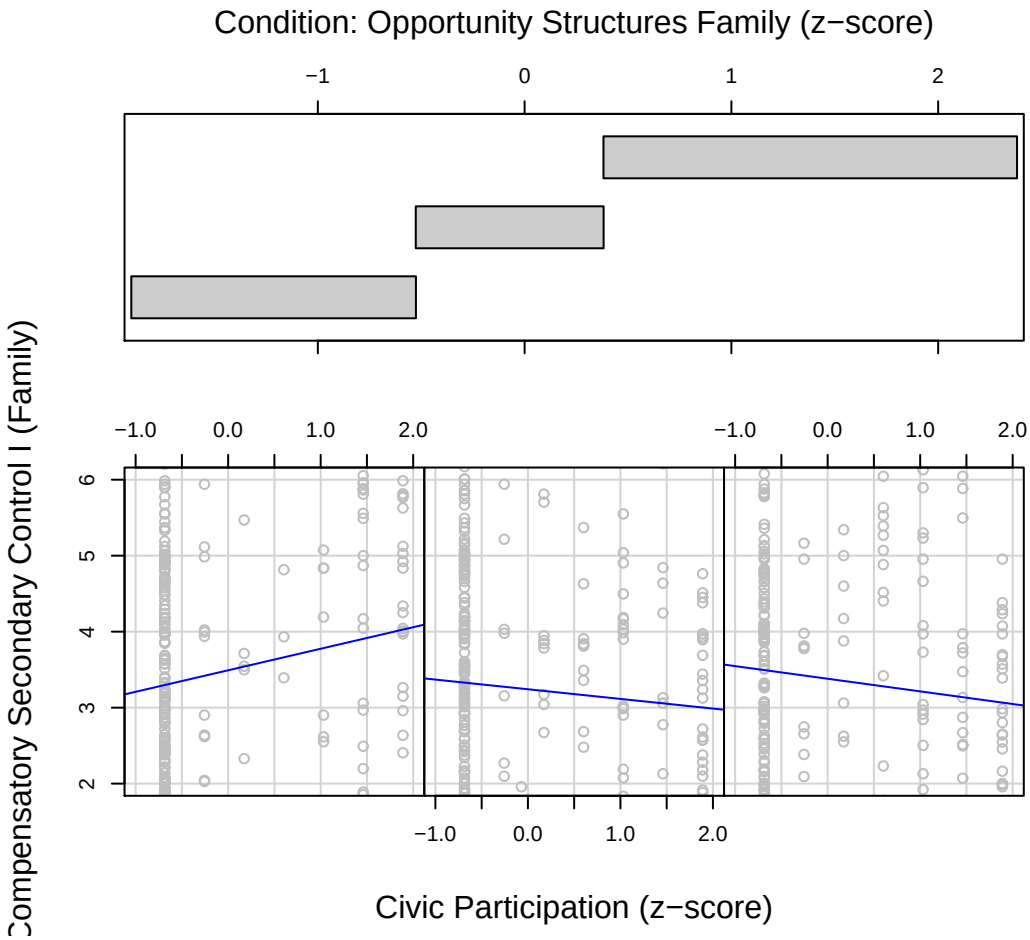


Figure 16. Correlation of self-protection in family and satisfaction with work conditional on family related opportunity structures and civic engagement.

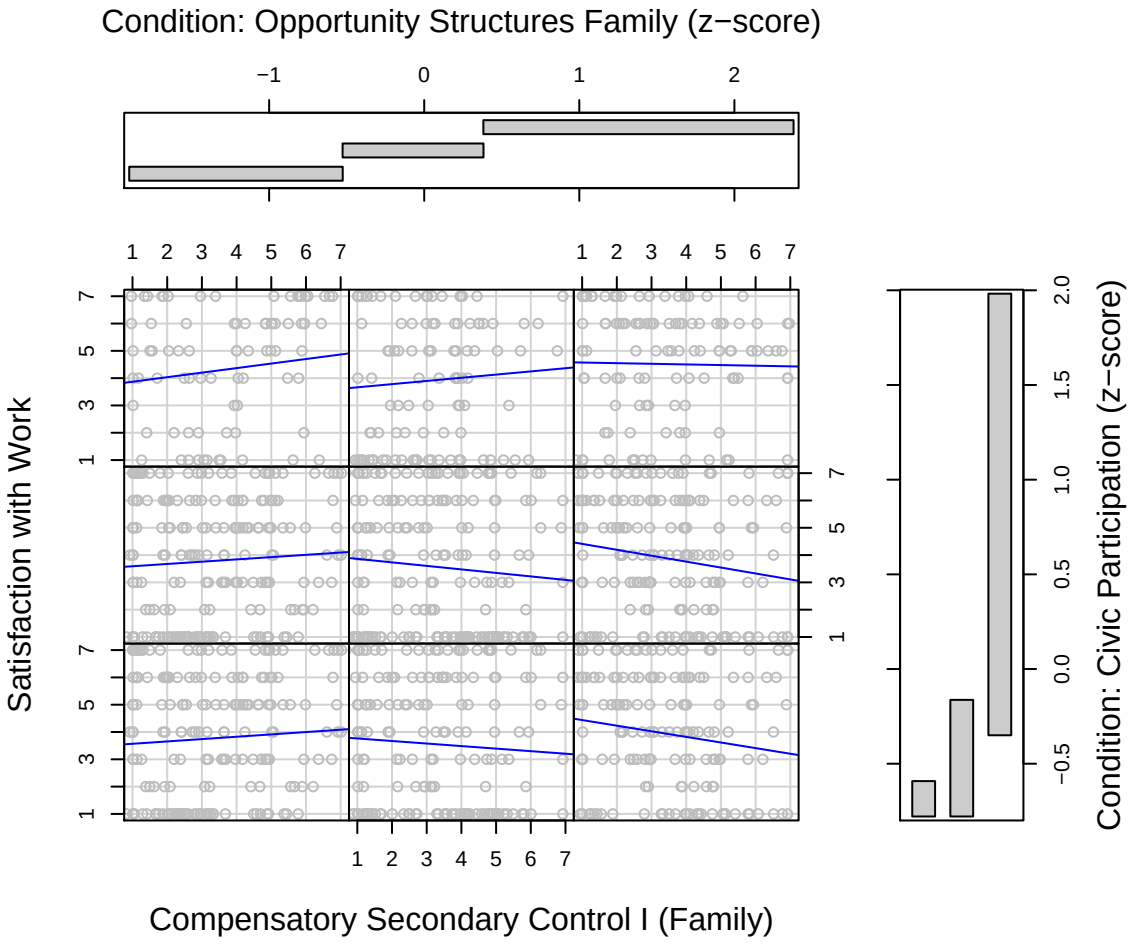


Figure 17. Correlation of civic engagement and disengagement at work conditional on work related opportunity structures.

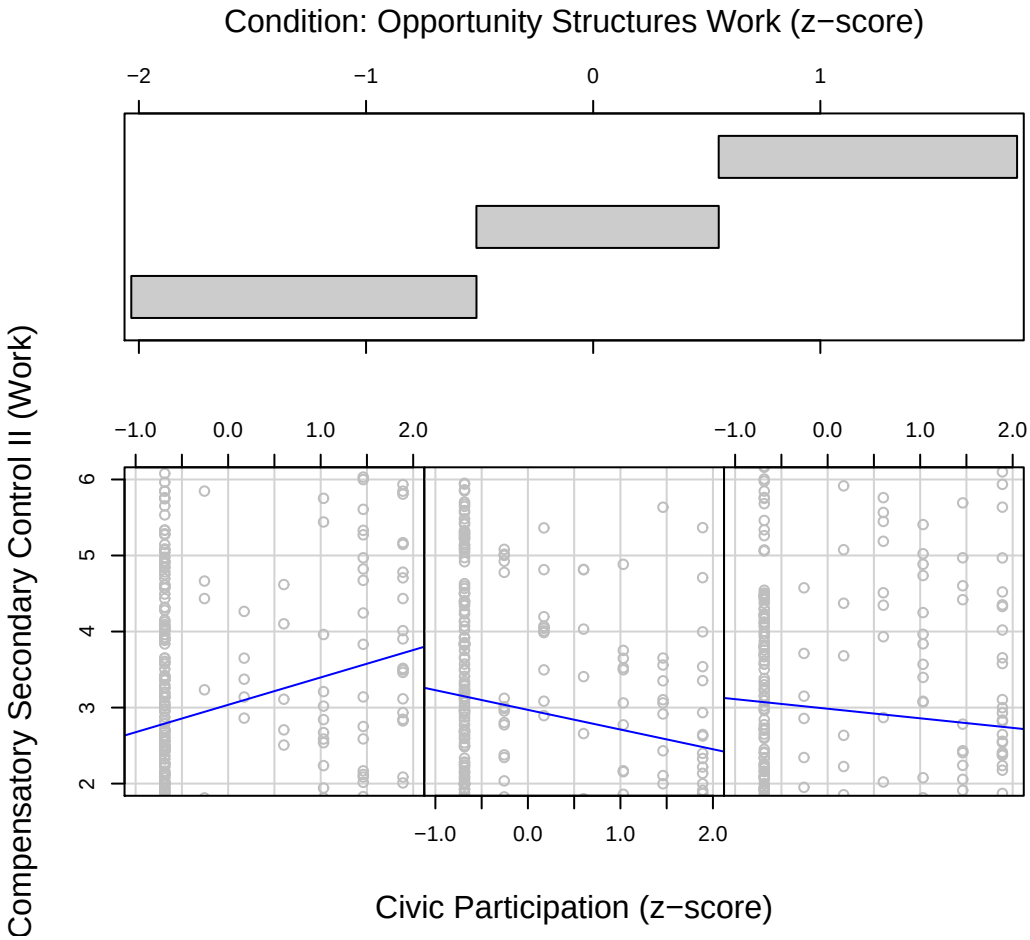


Figure 18. Correlation of disengagement at work and satisfaction with family life conditional on work related opportunity structures and civic engagement.

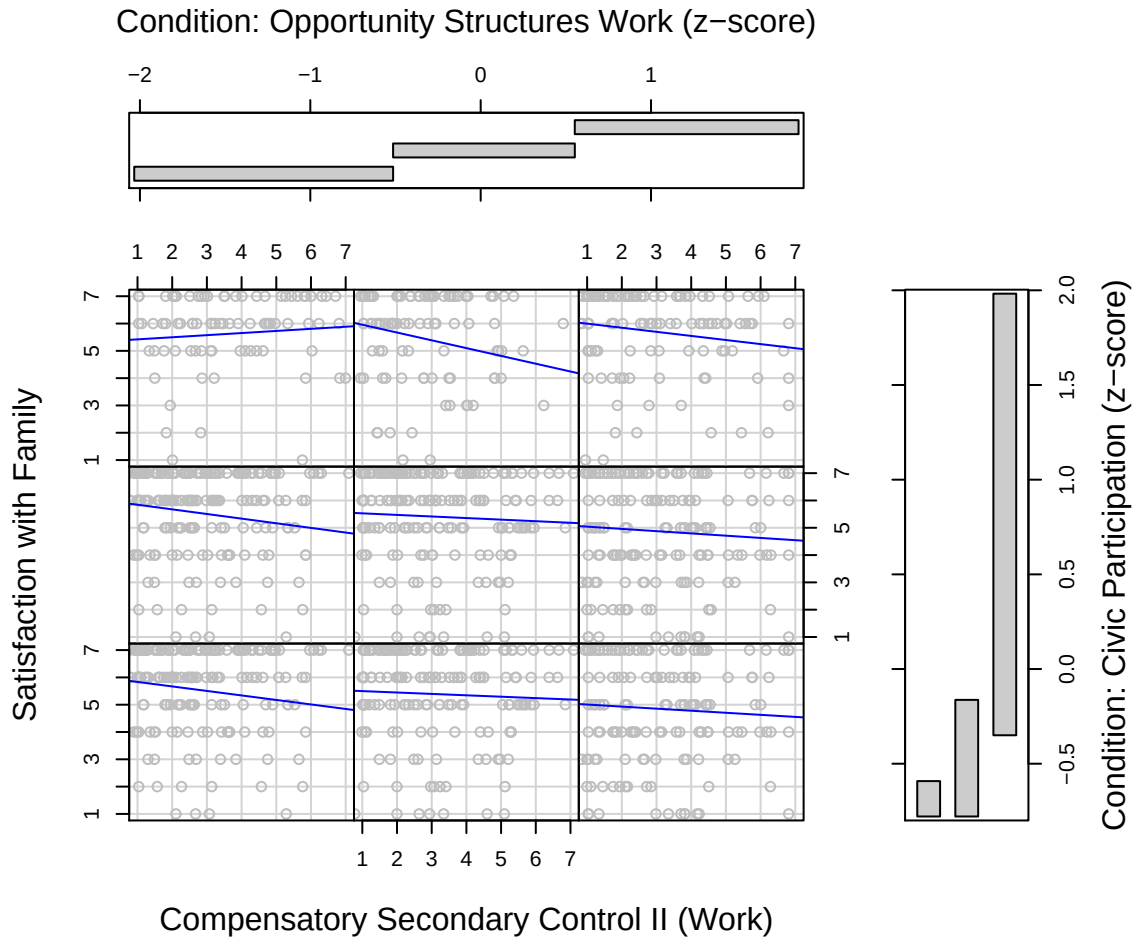


Figure 19. Correlation of civic engagement and disengagement in family conditional on family related opportunity structures.

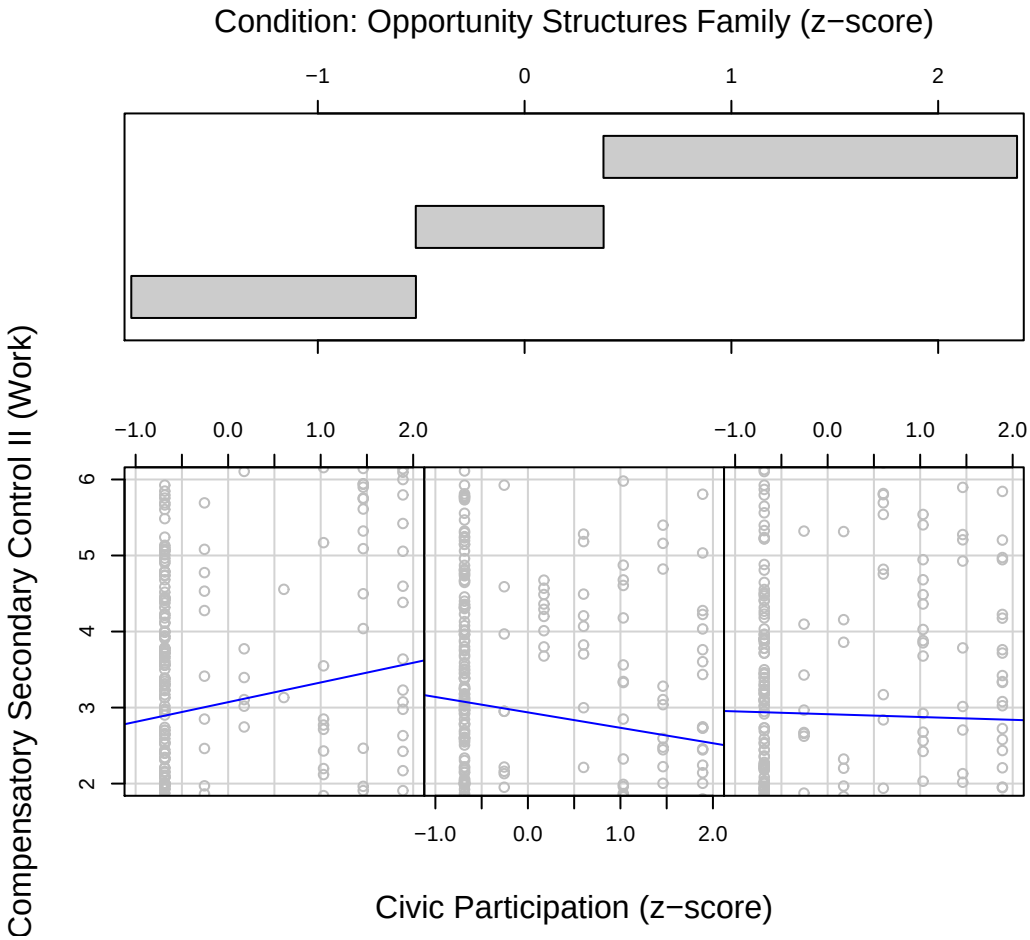


Figure 20. Correlation of disengagement in family and satisfaction with work conditional on family related opportunity structures and civic engagement.

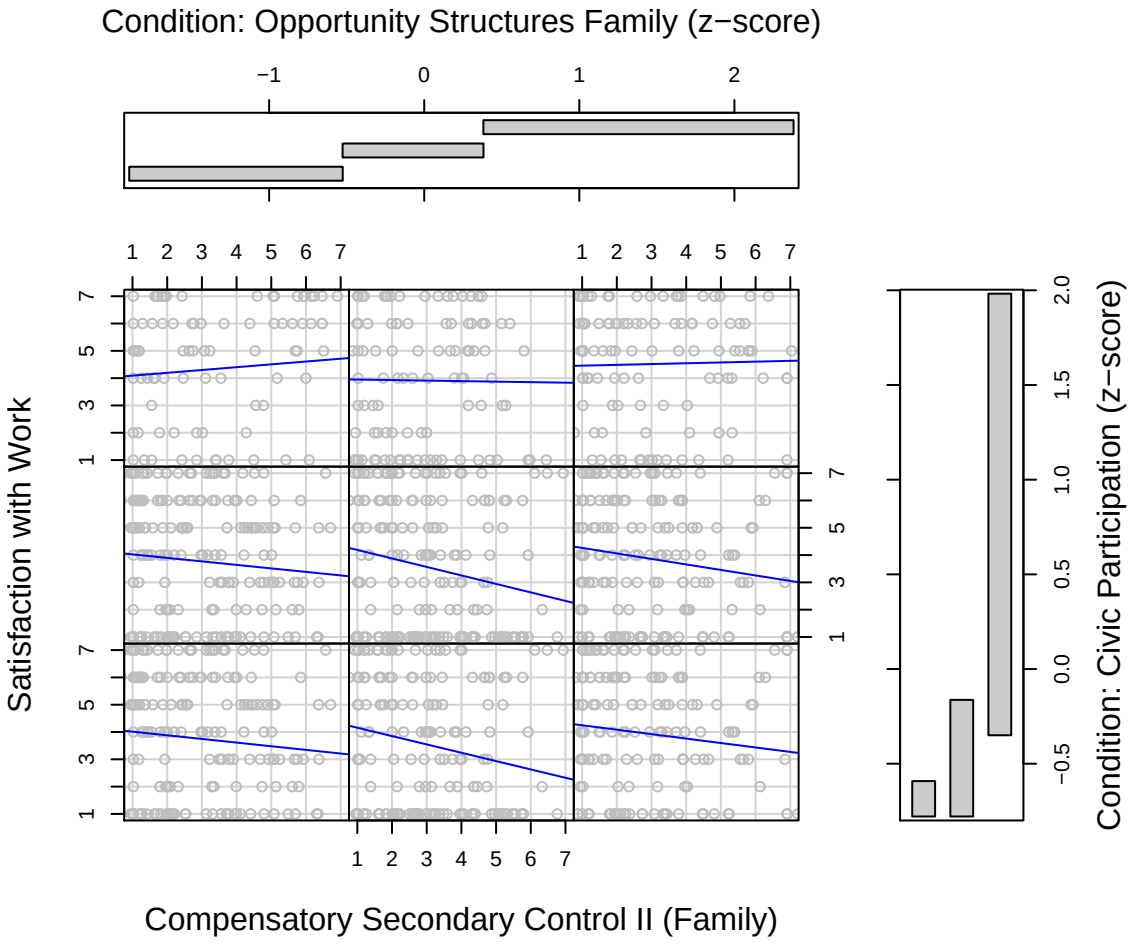


Figure 21. Correlation of disengagement in family and self-protection conditional on family related opportunity structures and civic engagement.