

Agency and Adaptive Development in the Transition from University to Work: A Longitudinal Study

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Table of Contents

		p.
	List of Tables and Figures	vi
	Acknowledgments	viii
1	Introduction	1
2	Theoretical and Empirical Background	5
	2.1 Human Agency in Adaptive Development	6
	2.1.1 Human Agency	6
	2.1.2 What is Adaptive Development?	9
	2.1.3 Development as Continuity and Change	12
	2.2 The Action-Phase Model of Developmental Regulation	14
	2.2.1 Goals as Starting Points	14
	2.2.2 Central Assumptions of the Action-Phase Model	15
	2.2.3 Motivators of Goal Engagement and Goal Disengagement	18
	2.3 The Transition from University to Work as Developmental Context	22
	2.3.1 Contextual Influences on Human Development	22
	2.3.2 Life-Span Transitions	23
	2.3.3 The Transition from University to Work	23
3	The Present Study	28
	3.1 Aims	29
	3.2 Hypotheses	32
	3.2.1 Do Individuals Change? (Hypothesis 1)	32
	3.2.2 Motivational Orientations and Work-Related OPS (Hypothesis 2)	34
	3.2.3 Work-Related OPS and Well-Being (Hypothesis 3)	35
	3.2.4 Work-Related OPS and Work Adaptation (Hypothesis 4)	37
	3.2.5 Motivational Orientations and Well-Being (Hypothesis 5)	38
	3.2.6 Motivational Orientations and Work Adaptation (Hypothesis 6)	39

4	Method	41
4.1	Considerations in Web-Based Research	42
4.2	Sample	45
4.2.1	Sample Recruitment	45
4.2.2	Sociodemographic Characteristics	46
4.3	Measures	50
4.3.1	Life Goals and Self-Concordance of Work Goals	50
4.3.2	Work-Related OPS	52
4.3.3	Well-Being	53
4.3.4	Work Adaptation	54
4.3.5	Sociodemographic Characteristics	55
4.4	Design	56
4.4.1	Longitudinal Study Design	56
4.4.2	Retention	57
4.5	Semi-Structured Interviews	58
4.6	Summary	59
5	Results	60
5.1	Latent Growth Curve Modeling at a Glance	61
5.2	Preliminary Analyses	64
5.2.1	Internal Consistencies and Measurement Invariance	64
5.2.2	Discriminant Validity	67
5.2.3	Intercorrelations	69
5.3	Univariate Change (Hypothesis 1)	72
5.4	Motivational Orientations and Work-Related OPS (Hypothesis 2)	80
5.5	Work-Related OPS and Well-Being (Hypothesis 3)	84
5.6	Work-Related OPS and Work Adaptation (Hypothesis 4)	89
5.7	Motivational Orientations and Well-Being (Hypothesis 5)	92
5.8	Motivational Orientations and Work Adaptation (Hypothesis 6)	96
6	Discussion	99
6.1	Agency and Adaptive Development during the Transition from University to Work: Findings of the Longitudinal Study	100
6.1.1	Change across the Transition: Unique and Shared Pathways	102

6.1.2	Engagement in and Disengagement from Work Goals: Re-Considering Some Assumptions	106
6.1.3	Learning Goals and Goal Self-Concordance as Motivators of Work-Related OPS	108
6.1.4	Effects of Work-Related OPS on Well-Being and Work Adaptation	110
6.1.5	Steps towards an Integrated Model	114
6.1.6	Reverse Effects: Symbolic Self-Completion and Negative Feedback Loops	117
6.1.7	Relations between Well-Being and Work Adaptation	121
6.1.8	The Transition from University to Work as Developmental Context	122
6.1.9	Limitations and Strengths	125
6.2	Where Do We Go From Here?	128
6.2.1	Plasticity, Agency, Adaptation, and Contextual Sensitivity	128
6.2.2	Plasticity in Human Development	129
6.2.3	Agency and the Action-Phase Model of Developmental Regulation	130
6.2.4	Re-Visiting Adaptive Development	134
6.2.5	Human Lives in Time and Place: The Role of Social Change	135
6.2.6	Interdisciplinary Links	136
6.2.7	Potential Applications	138
6.2.8	Conclusion	140
	References	141
	Appendix A: Measures	158
	Appendix B: Semi-Structured Interview	162
	Appendix C: Intercorrelations	164
	Appendix D: Validity Analyses	169
	Zusammenfassung (Summary)	173
	Ehrenwörtliche Erklärung (Certification of Authorship)	176
	Curriculum Vitae	177

Tables

Table 4.1	Sociodemographic Characteristics in the Sample and Respective Population by Field of Study
Table 4.2	Work Situation One Year after Graduation by Field of Study
Table 4.3	Measures
Table 5.1	Internal Consistencies and Configural Invariance
Table 5.2	Factorial Invariance across Time
Table 5.3	Rank-Order Stability
Table 5.4	Model Fit and Parameter Estimates of Univariate Linear LGM
Table 5.5	Model Fit and Parameter Estimates of Univariate Unconditional LGM
Table 5.6	Motivational Orientations and Work OPS: LGM Model Fit and Associations
Table 5.7	Work-Related OPS and Subjective Well-Being: LGM Model Fit and Associations
Table 5.8	Work-Related OPS and Psychological Well-Being: LGM Model Fit and Associations
Table 5.9	Work-Related OPS and Work Adaptation: LGM Model Fit and Associations
Table 5.10	Motivational Orientations and Subjective Well-Being: LGM Model Fit and Associations
Table 5.11	Motivational Orientations and Psychological Well-Being: LGM Model Fit and Associations
Table 5.12	Motivational Orientations and Work Adaptation: LGM Model Fit and Associations
Table 6.1	Overview of Hypotheses and Findings
Table C.1	Means, Standard Deviations, and Intercorrelations at Wave 1
Table C.2	Means, Standard Deviations, and Intercorrelations at Wave 2
Table C.3	Means, Standard Deviations, and Intercorrelations at Wave 3
Table C.4	Means, Standard Deviations, and Intercorrelations at Wave 4
Table D.1	Learning, Status and Other Life Goals: Intercorrelations
Table D.2	Self-Concordance and Other Properties of Work Goals: Intercorrelations
Table D.3	Work-Related OPS and Behavioral Intentions: Intercorrelations
Table D.4	Work-Related OPS and Goal Adjustment: Intercorrelations
Table D.5	Central and Additional Indicators of Well-Being: Intercorrelations

Figures

- Figure 2.1 The action-phase model of developmental regulation (Heckhausen, 1999)
- Figure 3.1 Conceptual model
- Figure 4.1 Longitudinal study design
- Figure 5.1 Bivariate latent growth curve model (LGM)
- Figure 5.2 Mean-level change in status goals
- Figure 5.3 Mean-level change in self-concordance of work goals
- Figure 5.4 Mean-level change in disengagement from work goals
- Figure 5.5 Mean-level change in positive affect
- Figure 5.6 Mean-level change in negative affect
- Figure 5.7 Mean-level change in purpose in life
- Figure 5.8 Mean-level change in autonomy
- Figure 5.9 Mean-level change in positive relations
- Figure 5.10 Mean-level change in work satisfaction
- Figure 5.11 Mean-level change in progress towards work goals
- Figure 5.12 Mean-level change in employment
- Figure 5.13 Mean-level change in income
- Figure 5.14 Conceptual model with aspects considered in hypothesis 2 highlighted
- Figure 5.15 Conceptual model with aspects considered in hypothesis 3 highlighted
- Figure 5.16 Conceptual model with aspects considered in hypothesis 4 highlighted
- Figure 5.17 Conceptual model with aspects considered in hypothesis 5 highlighted
- Figure 5.18 Conceptual model with aspects considered in hypothesis 6 highlighted
- Figure 6.1 Conceptual model

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1 Introduction

(How) can individuals bring about adaptation in their development themselves? This was the starting question for my thesis in which I studied whether individuals can indeed shape their own development in adaptive ways during the transition from university to work – and if so, how. Psychology has long focused on maladaptation and pathology and has only recently begun to study more extensively what makes life worth living (Seligman & Csikszentmihalyi, 2000). A central suggestion put forth in this thesis is that individual agency plays a central role in adaptive development.

The idea that individuals create and shape their own development traces back to the ancient world and was already treated by Aristotle (330 BC/1953). In contemporary psychology, many subdisciplines share an interest in agency, among them developmental psychology (e.g., Lerner & Busch-Rossnagel, 1981). One model to understand which agency processes are adaptive when and why is the action-phase model of developmental regulation (Heckhausen, 1999), the theoretical cornerstone of this thesis.

Human agency takes place in context; and the developmental context of interest in this thesis was the transition from university to work. Life-span transitions in general are interesting for the study of agency because during these times development is less constrained by contextual forces. Individuals may select different developmental pathways during such transitions, which may carry both chances for flourishing as well as risks for deterioration.

Particularly during work-related transitions, such as the transition from university to work, much is at stake. Despite claims that we currently witness the “end of work” (Rifkin, 1995) and despite rising economic difficulties (Blossfeld, Klijzing, Mills, & Kurz, 2005), work is still one of the central life domains for many individuals in contemporary societies (e.g., Vondracek & Porfeli, 2003).

A first set of questions addressed in this thesis is what motivates individuals to engage in their work goals and what, on the other hand, fosters disengagement. Work goals are of central importance during the transition from university to work. However, to merely want something is not automatically to strive for it, and individuals differ in the extent to which they engage in their work goals. Why? Do the broader goals individuals hold in life make a difference? Are individuals who strive for high social status more engaged in their work goals? Or is it more motivating to hold learning goals, that is, to want to develop one’s competencies and to broaden one’s horizon? Besides, do the reasons why individuals engage in their work goals play a role? Is it more motivating when individuals engage in their goals out of situational necessities or because they identify with their goals and derive enjoyment and stimulation from them?

A second set of questions concerns the effects of work-related goal engagement and disengagement. Do individuals who are more engaged in their work goals experience increases in life satisfaction, do they become increasingly happy and less depressed? Do they experience increases in purpose in life, autonomy, and positive relations? Does goal engagement promote work satisfaction and the progress individuals perceive towards their work goals? And finally, does goal engagement have any effect on whether individuals find employment or the income they earn?

These are some of the questions addressed in this thesis. Four overarching goals guided my work. I wanted to understand how (1) individuals changed during the transition from university to work, (2) which role they played themselves in bringing about these changes, (3) which aspects changed in particular – I was not interested in problematic but in adaptive developmental outcomes – and (4) whether these processes were similar or different for individuals in favorable vs. unfavorable developmental contexts. Put differently, I was interested in developmental plasticity (e.g., Baltes, 1987), human agency (e.g., Heckhausen, 1999), adaptive development (e.g., Seligman & Csikszentmihalyi, 2000); and I took a context-sensitive perspective (e.g., Silbereisen, Eyferth, & Rudinger, 1986). The specific hypotheses were based on the action-phase model of developmental regulation (Heckhausen, 1999). They built on previous research and also introduced new ideas.

In order to test these hypotheses, a web-based longitudinal study was conducted with a sample of 523 German university graduates who were first surveyed at graduation as well as four months, eight months, and twelve months after graduation. Graduates from four target fields of study were selected in order to compare between developmental contexts with favorable (medicine, psychology) vs. unfavorable (architects, humanities) employment opportunities. The sample appeared reasonable representative. This data base allowed for investigating the dynamics unfolding across time, using latent growth curve modeling as a suitable tool for longitudinal data analysis (e.g., Singer & Willett, 2003). In addition, one year after graduation interviews were conducted with 15 participants.

I do not want to anticipate the findings from study here. Suffice it to say that individuals indeed changed in different directions during the transition from university to work. These findings challenge claims made in other fields that personality is “set like plaster” (Costa & McCrae, 1994) or that well-being is fixed to a set point and genetically determined (e.g., Lykken & Tellegen, 1996). Moreover, the findings showed that these changes were not random. Individuals did indeed play an important role in whether these changes were for the better or for the worse. Thus, agency made a difference, not only in terms of well-being, but also regarding some aspects of work adaptation, supporting central propositions of the action-phase model. Importantly, most of these findings held whether individuals faced bright or gloomy employment prospects.

The present findings may be of interest to researchers in various fields. On the one hand, this thesis is concerned with the role of individual agency, a topic of interest not only to developmental psychologists. Specifically, focusing on the motivational and volitional (cf. Lewin, 1926) roots of well-being and work adaptation, this thesis is at the interface of developmental psychology, motivational and personality psychology. Moreover, researchers interested in change may be interested in the dynamics and processes unfolding over the course of the transition. The questions addressed in thesis have also links to other disciplines, some of which are briefly outlined in the final chapter. Finally, following the notion of an applied developmental science (e.g., Lerner, Fisher, & Weinberg, 2000), these findings have implications for potential applications.

The thesis is structured in the following way: In chapter 2, I develop the theoretical and empirical background of my work starting with an overview of the three central concepts: What is agency? What is adaptation? And what is development? Then the action-phase model of developmental regulation (Heckhausen, 1999) is introduced. I present empirical evidence for central assumptions of the model and I outline links to other theories and findings in order

to develop some new ideas. Finally, the developmental context under study, the transition from university to work, is introduced. In chapter 3, study aims and hypotheses are presented. The method of the longitudinal study including the sample, measures, and design is presented in chapter 4. Chapter 5 then gives an overview of the results of this study. At the beginning of this chapter, I introduce the basic terminology and idea behind the statistical approach I used, latent growth curve modeling. In the final chapter, I provide an in-depth discussion of my findings. In the first part, findings from the longitudinal study are summarized. I outline where these findings met the hypotheses and where they departed from them. Moreover, limitations of the study are discussed. In the second part of the final chapter, I provide some ideas for future research, outline interdisciplinary links and, finally, I consider potential applications.

2 Theoretical and Empirical Background

In this chapter, I present the theoretical and empirical background of this thesis starting with an overview of the concepts of agency, adaptation and development. In the second part, the action-phase model of developmental regulation (Heckhausen, 1999) is introduced. In the third section of this chapter, I present the specific context under study, the transition from university to work.

2.1 Human Agency in Adaptive Development

2.1.1 Human Agency

The idea that individuals produce their own development – often referred to as *human agency* – has attracted considerable interest, not only in developmental psychology. Human agency is a central concept in this thesis, which is why I start with a brief glance at its historical roots followed by an overview of agency concepts in contemporary psychology and a review of some current controversies. In this section, I aim to provide a broader conceptual framework on human agency to put the specific theoretical framework, which guided this thesis, into context.

A Short Glance at Historical Roots

The notion that individuals aim to shape, direct, and influence their own life is not new, but its roots trace back to the ancient world. These thoughts figured prominently in Aristotle's writings (330 BC/1953) where, interestingly, agency was already treated as a prerequisite of adaptive development, specifically, eudaimonia (ευδαιμονία). The concept of eudaimonia, commonly translated as “happiness” or “flourishing”, recently has received renewed interest in psychology as will be discussed later. In the Nicomachean ethics, it was stated that “...every action and pursuit is thought to aim at some good” (Aristotle, 330BC/1953, Book I, Ch. 1) implying that, agency always aims at adaptation. However, Aristotle already acknowledged that living a virtuous life does not guarantee happiness and pointed to the influence of good fortune, thus, forces beyond individual control.

In Renaissance, the idea of agency again received widespread interest, which may be best reflected in the developmental ideal of the homo universalis or Renaissance man: A person that develops his or her full potential through acquiring knowledge in very diverse fields. Not only in the ancient world and in Renaissance, agency still is today a concept of central interest to philosophy (e.g., Frankfurt, 1988). Some interdisciplinary links will be outlined in the final chapter of this thesis. In the following, I limit my review to agency concepts in contemporary psychology.

Agency Concepts in Contemporary Psychology

In developmental psychology, the concept of agency dates back to the work of scholars like Bühler (1933). In 1981, Lerner and Busch-Rossnagel revitalized interest in human agency

through their seminal publication on *Individuals as Producers of their Development* (see also Lerner & Walls, 1999). Since then, developmental psychologists have studied human agency thoroughly and have proposed theories how individuals regulate their own development (e.g., Baltes & Baltes, 1990; Brandtstädter, 2001; Carstensen, Isaacowitz, & Charles, 1999; Heckhausen, 1999; Little, 2002; Nurmi, & Salmela-Aro, 2006; Silbereisen, 1996; Silbereisen et al., 1986). One of these theories is the action-phase model of developmental regulation (Heckhausen, 1999), which is introduced below.

In other fields of psychology, the idea that individuals regulate themselves and the world around them – eventually influencing their own development – has also played an important role, most prominently in motivational psychology (e.g., Heckhausen & Heckhausen, 2006; Lewin, 1926; Wicklund & Gollwitzer, 1982), personality and social psychology (e.g., Allport, 1955; Bandura, 2001; Baumeister, Bratslavsky, Muraven, & Tice, 1998; Carver & Scheier, 1998; Markus & Kitayama, 2003; Rothbaum, Weisz, & Snyder, 1982; Ryan & Deci, 2004; Sheldon & Elliot, 1999; Skinner, 1996), educational psychology (e.g., Ames & Archer, 1988; Elliot & Dweck, 2005), and organizational psychology (e.g., Locke & Latham, 2000, 2006). The idea of agency further appears at the heart of humanistic psychology (e.g., Rogers, 1961). Approaches in the various psychological fields rest on the shoulders of early founders like William James (1890) who introduced the differentiation of the self as composed of *I* and *me*, which can also be found in current theories of developmental regulation (see Poulin, Haase, & Heckhausen, 2005). Definitions of agency are diverse (cf. Fisher, 1999; Gergen, 1997), but many psychological theories converge in that they link individual agency to psychosocial adaptation. Interestingly, this link appears already in the early developmental work by Charlotte Bühler (1933).

Current Controversies

The idea that individuals produce their own development is attractive, but it has also attracted considerable criticism. Some issues of controversy are briefly outlined in the following.

First, what is agency? Many various definitions of agency have been proposed (see Silbereisen, Best, & Haase, 2007). What makes things more complicated is that the term agency appears to imply activity and engagement for some scholars (e.g., Hitlin & Elder, 2007), which clouds the importance of goal disengagement, an equally important agency process (e.g., Heckhausen, 1999; Wrosch, Scheier, Carver, & Schulz, 2003; Wrosch, Scheier, Miller, Schulz, & Carver, 2003). In my thesis, human agency serves as an umbrella concept. As a working definition, I understand agency as the ability to choose goals, to put them forth into

action, and to disengage from them. I hence consider motivational and volitional processes (cf. Lewin, 1926) as prime examples of human agency.

Second, is agency necessarily rational, effective, or conscious? The idea that agency requires rationality (cited in Sampson & Laub, 2005) stands in contrast to findings on the often adaptive limits of human rationality (e.g., Gigerenzer, 2007). Agency is not necessarily rational nor does it necessarily lead to the intended consequences (e.g., Wegner, 1994). In the present thesis, I focus on agency processes, which are anchored in the explicit motivational system and accessible by self-report (cf. McClelland, Koestner, & Weinberger, 1989). However, agency processes are by no means always conscious as reflected in psychological work on implicit and automatic processes of regulation (e.g., Brandtstädter, 2001; Gollwitzer & Bargh, 1996; Heckhausen, Wrosch, & Fleeson, 2001).

Third, is agency important? Individual agency is not the only influence in human development as was already acknowledged by Aristotle who emphasized the importance of good fortune. Scholars have argued that mainly structural forces (for an overview see Evans, 2007) or socialization influences shape who we are and how we develop. Others point to the importance of the genetic make-up in human development (e.g., McGuffin, Riley, & Plomin, 2001). In fact, theories of developmental regulation explicitly acknowledge the social and biological constraints within which development takes place (e.g., Heckhausen, 1999). The question is whether one conceives individual agency as a noteworthy influence on development besides these forces or not.

Fourth, does agency exist at all? In a nutshell, the existence of free will has been questioned by some scholars in the neurosciences (e.g., Roth, 1994; see Libet, 1985). In their view, all our actions are determined not by ourselves (a concept which then becomes meaningless), but by our neurobiological make-up (for opposing positions see for example Habermas, 2004; Kagan, 2006). This debate cannot be reviewed here. What is important is the subtle distinction between agency and free will. Human agency states that humans do in fact make decisions and engage in goals. How they arrive at these choices and goals, by free will or by other forces, is another question.

Finally, how, when, and why does agency foster adaptation? Different psychological theories have been put forth, which address the role of agency in adaptive development. One of them is the action-phase model of developmental regulation (Heckhausen, 1999). Before I introduce this model in more detail, I want to clarify the concept of adaptive development.

2.1.2 What is Adaptive Development?

What is adaptive development? Many different answers to this question about the “good life” have been suggested. In this section, I provide a brief introduction into positive psychology and positive development and present three criteria of adaptive development that have been discussed in the literature – subjective well-being, maximization of primary control, and eudaimonic or psychological well-being. At the end of this section, the criteria of adaptation considered in this thesis are presented.

Positive Psychology and Positive Development

In their seminal publication, Seligman and Csikszentmihalyi (2000) noted that “[t]he exclusive focus on pathology that has dominated so much of our discipline results in a model of the human being lacking the positive features that make life worth living” (p. 5) and exerted a plea to the scientific community to move towards the study of positive psychology. Many publications (e.g., Csikszentmihalyi & Csikszentmihalyi, 2006; Schmuck & Sheldon, 2001), conferences, and the recently founded Journal of Positive Psychology demonstrate the rapidly growing interest in a psychology of positive human functioning.

Scholars have long been interested in the positive aspects of human life including developmental psychologists. For example, Erikson (1959) formulated the psychosocial virtues stemming from a productive mastery of age-typical developmental tasks in his theory of identity development. He suggested, for example, love as the psychosocial virtue of young adulthood and care and wisdom as the virtues of middle and late adulthood, respectively. Work on resiliency (e.g., Rutter, 1985) and psychosocial maturity (Greenberger, 1984) also demonstrates the discipline’s interest in psychosocial adaptation. In the more recent literature, we find a body of work on successful aging (Baltes & Baltes, 1990; Freund & Baltes, 1998; Schulz & Heckhausen, 1996) and, more recently, on positive (youth) development (e.g., Damon, 2004; Lerner, Dowling, & Anderson, 2003; Scales, Benson, Leffert, & Blyth, 2000). Scholars agree that adaptive development is more than the mere absence of problems, but they diverge in their definitions of adaptive development.

Subjective Well-Being

Happiness is an important criterion of adaptive development for many people. One way to think about happiness is to consider positive cognitive evaluations of one’s life, the presence of positive affect, and the absence of negative affect as core ingredients. This concept has been called subjective (also referred to as hedonic) well-being (e.g., Diener, 2000). Thus, an

individual who is thoroughly satisfied with her life, often feels happy and seldom depressed would experience high subjective well-being. Importantly, positive and negative affect are conceptualized as separate dimensions (Watson, Clark, & Tellegen, 1988), implying that positive and negative affect may co-exist at any given time. The concept of subjective well-being has inspired a rich literature (e.g., Diener & Biswas-Diener, in press).

However, subjective well-being is, as the term implies, subjective and prone to re-appraisal processes and subjective reference frames (Heckhausen, 1999). Another argument against subjective well-being is the short-lived nature of positive affect stemming from habituation processes: “Remember that the joys of freedom, for those who suffered oppression, do not last as long as the sorrows of oppression did” (Frijda, 1988, p. 354). Dissatisfied with the notion of subjective well-being as the hallmark of adaptive development, scholars have suggested turning to other indicators of developmental adaptation.

Maximization of Primary Control

According to Heckhausen and Schulz (Heckhausen, 1999; Schulz & Heckhausen, 1996) adaptive development refers to the maximization of one’s long-term potential for primary control, that is, the extent to which one is able to control events in the environment (see Rothbaum et al., 1982). Put differently, in this view, adaptive development is to enlarge one’s degrees of freedom to bring about change in the world. The idea that humans – and other mammalian species (see White, 1959) – benefit most from primary control draws from the evolutionary advantages for survival, reproduction, and attaining any other desired outcome in one’s environment. The specific ways through which primary control can be attained and enlarged vary as a function of historical and cultural context (cf. Heckhausen & Schulz, 1999). Importantly in the context of the present thesis, work can be seen as one of the central channels through which primary control is attained in contemporary societies (e.g., Vondracek & Porfeli, 2003).

Eudaimonic or Psychological Well-Being

The concept of eudaimonic well-being may be well-suited to build a bridge between viewing adaptive development in terms of subjective well-being, which is temporary and subjective, and maximizing primary control, which may be difficult to measure at times. Eudaimonic well-being recently has received greater attention in psychology (e.g., Keyes, Shmotkin, & Ryff, 2002; Ryan & Deci, 2001). The concept of eudaimonia was introduced by Socrates and later developed by Aristotle (330 BCE/1953) who viewed hedonic happiness as vulgar, rendering

humans to slaves of their instincts and desires. Instead, he posited that true happiness was reflected in the expression of virtue. According to Ryan and Deci (2001) the hedonic approach towards well-being has focused on pleasure attainment and pain avoidance whereas the “eudaimonic approach [...] focuses on meaning and self-realization and defines well-being in terms of the degree to which a person is fully functioning” (p. 141). These two divergent perspectives on well-being are also reflected in personal narratives where happiness and maturity emerge as two core aspects of the “good life” (Bauer, McAdams, & Sakaeda, 2005; King, 2001; see also McGregor & Little, 1998).

Two approaches to eudaimonic well-being are considered here. Ryff (e.g., 1989; Ryff, & Keyes, 1995) has proposed an influential theory of *psychological well-being* drawing from the work of different scholars (e.g., Allport, 1955; Bühler, 1933; Erikson, 1959; Maslow, 1968; Rogers, 1961). She suggests six dimensions of psychological well-being, namely, positive evaluations of oneself and one’s past (self-acceptance), a sense of continued growth and development (personal growth), the belief that one’s life has meaning and purpose (purpose in life), the experience of positive relations with others (positive relations), the ability to manage effectively one’s life and the environment (environmental mastery), and a sense of self-determination (autonomy). The three basic needs proposed by Deci and Ryan (e.g., 2002) are another approach to understand eudaimonic well-being. They include the needs for autonomy (cf. DeCharms, 1968), competence (cf. Heckhausen, 1999; White, 1959), and relatedness (cf. Baumeister & Leary, 1995). At closer scrutiny, commonalities between these approaches emerge. Both emphasize autonomy and positive relations. They were hence considered as important aspects of psychological well-being in this thesis. Purpose in life was added as a third indicator of psychological well-being in view of the central importance of meaning and purpose in human life (Frankl, 1946/2002).

Indicators of Adaptive Development Considered in this Thesis

In this thesis, I followed Heckhausen and Schulz (e.g., 1999) in conceiving the maximization of one’s long-term potential for primary control as the central criterion of adaptive development. However, studying short-term effects – the longitudinal study covered one year –, multiple criteria of adaptation were considered as potential routes to (long-term) primary control. I focused on subjective and psychological well-being on the one hand and adaptation in the work domain on the other hand.

Whilst acknowledging the limitations of each aspect, I sought to capitalize on combining these multiple dimensions. Subjective well-being was included because it is known

to affect general psychological functioning and physical health (Salovey, Rothman, Detweiler, & Steward, 2000), a central precondition for exerting primary control. Moreover, well-being serves an important information function (e.g., Schwarz & Clore, 2003) signaling to individuals when things go right or wrong. Thus, feeling good or bad may prompt regulation processes, that is, well-being itself may be a resource for human agency (e.g., Fredrickson & Losada, 2005; Lyubomirsky, King, & Diener, 2005). Psychological well-being (Ryff, 1989), as was explained earlier, was included because it may serve as a bridge between subjective well-being and primary control.

Besides well-being, work adaptation was studied. I included two objective indicators of work adaptation as proxies for primary control, employment and income, and I added two subjective indicators. One of them was satisfaction with work, a domain-specific aspect of well-being, which also may serve important information and regulation functions. Moreover, the perceived progress towards work goals was studied (Little, 1983) because of the close link between goal progress and well-being (Carver & Scheier, 1990).

2.1.3 Development as Continuity and Change

Now that the concept of agency and criteria of adaptation have been introduced, what is missing is to clarify the concept of development. Development is a construct whose definition depends heavily on underlying theoretical and philosophical models (cf. Featherman & Lerner, 1985; Overton, 2003; Thelen & Smith, 1998). One influential paradigm has been the life-span view of human development, which states that development consists of both change and continuity across the life span (e.g., Baltes, 1987). Moreover, the life-span view suggests that development is, within certain limits, malleable and plastic (see also Lerner, 1996).

In the present thesis, I was interested in two forms of change. From a person-centered perspective (cf. Magnusson, 1998), individuals may change in different directions across the life span. Some may increase in aspects of psychological functioning; others may decrease, while others may remain stable. Thus, individuals follow unique developmental trajectories resulting in interindividual differences in intraindividual change. On the other hand, individuals may also follow shared trajectories, that is, individuals may change in similar directions across the life span. These so-called mean-level changes were likewise of interest.

Caspi, Roberts, and Shiner (2005) proposed three principles of personality development in adulthood, which reflect possible patterns of change in the transition from university to work: First, the maturity principle, according to which people become increasingly well-adjusted as they grow older. Second, the cumulative continuity principle,

which implies increasing stability across the life span. Third, the corresponsive principle, which captures the ongoing interaction between persons selecting experiences and being shaped by these experiences, which eventually leads to personality accentuation. One might add a fourth and a fifth principle: A crisis principle, acknowledging that individuals may temporarily decline in aspects of functioning, for example after critical life events, and subsequently recover and even move to higher levels (Bonnano, 2004; Tedeschi, Park & Calhoun, 1998). And a loss principle, as a counterpart to the maturity principle, which acknowledges that individuals experience not only gains but, inevitably, also losses throughout their lives (cf. Baltes, 1987; Heckhausen, Dixon, & Baltes, 1989).

It is interesting to examine whether and how individuals change. However, it may be even more interesting to understand what fosters these changes. As noted by Caspi et al. (2005), “most importantly, the next generation of studies should move beyond description and attempt to explain patterns of continuity and change” (p. 468). In order to understand what predicted changes towards increasing adaptation during the transition from university to work, I focused on the role individuals played themselves in bringing about these changes.

2.2 The Action-Phase Model of Developmental Regulation

In the previous section, the concepts of agency, adaptation, and development were introduced. In this section, I present the action-phase model of developmental regulation (Heckhausen, 1999), the theoretical cornerstone of this thesis. I begin with an introduction of goal concepts and proceed to present the action-phase model. In the third part, I present ideas on antecedents of interindividual differences in goal engagement and goal disengagement.

2.2.1 Goals as Starting Points

The action-phase model of developmental regulation (Heckhausen, 1999) focuses on how individuals regulate developmental goals across the life span. Thus, what are goals?

Goals are broadly defined as “internal representations of desired states” (Austin & Vancouver, 1996), which can be operating inside or outside awareness. The present thesis focused on consciously accessible goals and regulatory processes, which are anchored in the explicit motivational system (cf. McClelland et al., 1989). Goal concepts appear in various theories in developmental as well as in motivational, personality, social, educational, and organizational psychology and can be seen as bridge concepts between these diverse psychological fields (e.g., Ames & Archer, 1987; Cantor, 1990; Carver & Scheier, 1998; Cross & Markus, 1991; Dweck, 1986; Emmons, 1986; Heckhausen, 1999; Kasser & Ryan, 1996; Klinger, 1975; Little, 1983; Locke & Latham, 2000; Maier & Brunstein, 2001; Miller, Galanter & Pribram, 1960; Sheldon & Elliot, 1999; Wicklund & Gollwitzer, 1982).

Goals may range from “magnificent obsessions” to “trivial pursuits” (cf. Little, 1989); and from highly idiosyncratic to strongly normative goals. Goals directed at one’s own development are called developmental goals (Heckhausen, 1999), and these goals are of central interest here. Developmental goals are internalized developmental tasks. Thus, they reflect age-typical normative challenges (e.g., Havighurst, 1976; Heckhausen, 1999; Noack, 1990). Such goals may range from finding a partner (e.g., Wrosch & Heckhausen, 1999) or having a child (Heckhausen et al., 2001) to mastering the entry into work as considered in the present thesis.

2.2.2 Central Assumptions of the Action-Phase Model

The action-phase model of developmental regulation (Heckhausen, 1999) proposes a theoretical framework for how individuals choose, pursue, and let go of developmental goals across the life span. Thus, the model addresses core features of human agency. The action-phase model constitutes a theoretical extension of the Rubicon model (see Heckhausen & Heckhausen, 2006) and is based on the life-span theory of control (Heckhausen & Schulz, 1995; Schulz & Heckhausen, 1996) and the model of Optimization in Primary and Secondary control (OPS, Heckhausen, 1999). A fundamental assumption is that individuals combine two types of control strategies in their attempts to shape their own development: Primary control, aimed at changing the environment, and secondary control, directed at the self (Rothbaum et al., 1982).

The action-phase model posits three major action phases (see Figure 2.1): A pre-decisional phase when goals are selected, an actional phase when goals are pursued, and a post-deadline phase when disengagement processes occur. The focus here is on how individuals put their goals forth into action once they have committed themselves to them, that is, when they have crossed the decisional “Rubicon”. During this goal engagement phase, primary and secondary control strategies should be selectively focused on the chosen goal: Individuals should invest behavioral resources such as effort and time (i.e., selective primary control) and activate meta-volitional (i.e., selective secondary control) strategies, such as believing in success and resisting distractions. In addition, compensatory primary control strategies (e.g., getting help) may be activated, particularly when approaching a developmental deadline, which marks a shift from better to worse opportunities for goal attainment. When individuals approach a deadline, they should increase their goal engagement in order to eventually attain their goal. Finally, when a point is reached where opportunities of goal attainment have all but disappeared, the developmental deadline is crossed. Then, compensatory control strategies should kick in, which ameliorate unhappiness through self-protective attributions and foster goal disengagement in order to protect long-term motivational resources. In contrast, when the individual has reached her goal, she should experience well-being, capitalize on her success, and start to choose and pursue other goals (cf. Havighurst, 1976). Note that the model conceptualizes goal engagement and goal disengagement not as traits, but as processes, which change across the life-span in accordance with waxing and waning opportunity structures.

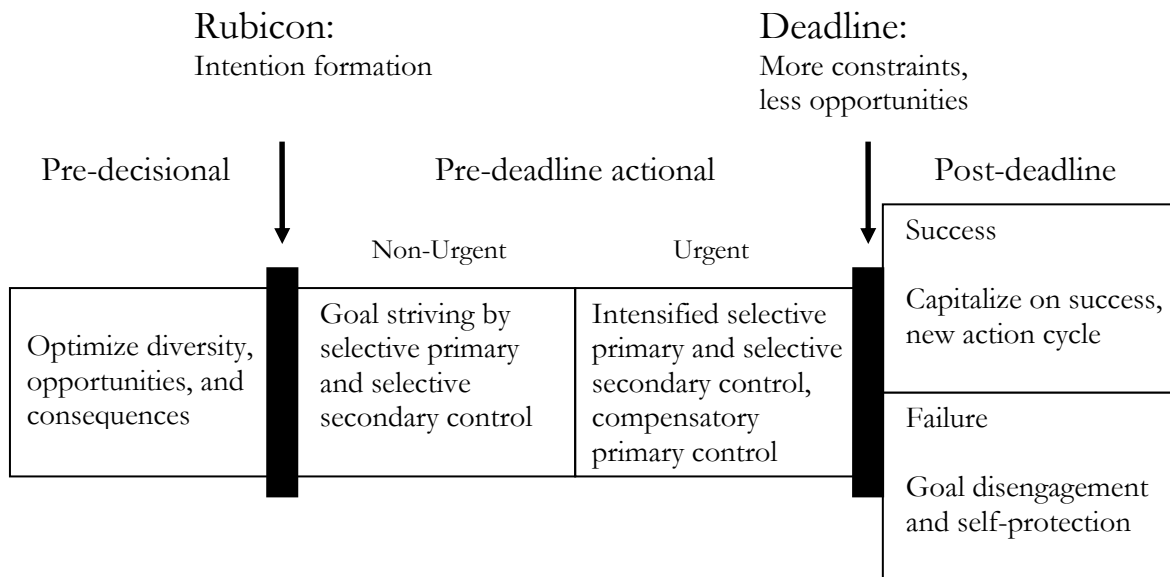


Figure 2.1. The action-phase model of developmental regulation (Heckhausen, 1999)

Empirical Support

The action-phase model has been applied to many developmental domains and transitions and has yielded consistent findings (for an overview see Heckhausen & Heckhausen, 2006). Studies demonstrate that individuals anticipate and take into account developmental deadlines when planning investments in diverse areas of development, such as building a family (Heckhausen et al., 2001; Wrosch & Heckhausen, 1999), coping with health problems and financial difficulties (Wrosch, Heckhausen, & Lachman, 2000), and navigating the transition from school to work. The school-to-work transition studies are discussed in more detail in the next section. In all these different domains, individuals activate control strategies in congruence with contextual opportunities for goal attainment. That is, they engage when opportunities are good and disengage when opportunities are bad. Moreover and even more important, these studies demonstrate that context-congruent engagement and disengagement patterns are linked to better adaptation.

Numerous other studies, which do not draw from the action-phase model, provide further support for central assumptions of the model. They show the benefits of context-congruent developmental regulation in other developmental domains (Salmela-Aro & Nurmi, 1997; Salmela-Aro, Nurmi, Saisto & Halmesmäki, 2001; Wiese, Freund, & Baltes, 2002). Moreover, in a meta-analysis, DeNeve and Cooper (1998) demonstrated the positive effects of general primary control striving on subjective well-being. Most of these studies have focused

on effects on subjective well-being whereas objective outcomes have been less frequently studied. I review these studies with a focus on the work domain in the next section.

Links to Other Theories of Developmental Regulation

The action-phase model of developmental regulation shares similarities with other theories of coping and developmental regulation. Both the action-phase model and Lazarus and Folkman's (1984) theory, for example, differentiate between problem-focused (i.e., primary control) vs. emotion-focused (i.e., secondary control) coping and regulation, respectively. The action-phase model further shares similarities with two other models of developmental regulation, namely, the Model of Selection, Optimization, and Compensation (SOC; e.g., Baltes & Baltes, 1990; Freund & Baltes, 1998; Freund & Baltes, 2002) and the Model of Assimilation, Accommodation, and Immunization (AAI; e.g., Brandtstädter, 2001; Brandtstädter & Rothermund, 2002), but it also departs from them in notable ways (for a discussion see Poulin et al., 2005). For example, with regard to the AAI model, a difference concerns the function of motivation. Whereas the action-phase model views the maximization of primary control as essential, the AAI model conceptualizes self-consistency as the central aim of motivation. Importantly, in contrast to both models, the action-phase model denotes the importance of congruency between individual regulation and contextual opportunities for adaptive development. The idea of adaptive fit between individual regulation and contextual opportunities is central for this thesis.

Interindividual Differences in Goal Engagement and Disengagement

At this point, it is fruitful to consider Lewin's (1926) distinction between motivation and volition. Whereas goal engagement constitutes a volitional process by which individuals put their goals forth into action, motivational processes account for the specific goals individuals select and the reasons why they choose them. So far, empirical research drawing from the action-phase model has focused on the effects of volitional processes on developmental outcomes. However, not all individuals are equally engaged in a goal when the time is right or are able to let go off of it when chances to attain the goal are gone. Thus, individuals differ in their use of adaptive or maladaptive strategies of developmental regulation.

2.2.3 Motivators of Goal Engagement and Goal Disengagement

To date, research on interindividual differences in goal engagement and goal disengagement is still in its infancy (Heckhausen & Heckhausen, 2006). Gaining more insight into the antecedents of engagement and disengagement with regard to a specific developmental goal – work – hence was an important aim of this thesis. This thesis considers two motivational antecedents, which have previously not been studied: Life goals and goal self-concordance.

Life Goals

Life goals have been defined as “a person’s aspirations to shape his or her life context and establish general life structures” (Roberts, O’Donnell, & Robins, 2004). In this thesis, I focused on two life goals, on *learning goals*, that is, striving to further one’s competencies and to broaden one’s horizon, and on *status goals*, that is, striving for high social status and prestige.

In principle, work is a life domain through which both of these life goals may be satisfied (McClelland, 1961, 1975). Thus, both goals could motivate goal engagement in the work domain. However, I take a differential stance drawing from H. Heckhausen. In his model of motivation, H. Heckhausen (see Heckhausen & Heckhausen, 2006) put forth a fundamental distinction between the outcomes and the consequences of an action. Whereas action outcomes arise from the action itself and are conceived as intrinsic, action consequences do not directly follow from the action itself and are conceived as extrinsic. Action outcomes refer to the direct results of an action (e.g., acquiring competencies). In contrast, action consequences refer to self-evaluation and evaluation by others as well as to material and symbolic (i.e., status) rewards. Note that actions themselves may also intrinsically motivate behavior, for example when individuals engage in an activity because of the “flow” they experience during engagement (cf. Csikszentmihalyi, 2000). To translate this framework into the concepts treated in this thesis: I focused on action (i.e., goal engagement) in the work domain. Whereas learning constitutes an (intrinsic) outcome with regard to work-related goal engagement, attaining high social status can be conceived as an (extrinsic) consequence of such engagement.

Studying the motivational functionality of learning vs. status goals, it is furthermore central to consider contextual opportunities. Certain contexts may provide rich opportunities to attain certain goals but not others. If individuals do not tailor their goals to these contextual opportunities they repeatedly experience failure, which should eventually undermine their motivation. Thus, learning and status goals do not have inherent motivational benefits, but their functionality depends on whether these goals fit contextual opportunities. As I will show

in the next chapter, during the transition from university to work, opportunities to satisfy learning goals are high whereas opportunities to satisfy status goals are limited. Thus, during the transition under study, learning goals were expected to promote work-related goal engagement whereas status goals were not. I elaborate on this prediction in chapter 3.

Can this hypothesis be backed up by empirical findings? The evidence is mixed. Intrinsic and extrinsic life goals have been studied extensively in the context of self-determination theory (e.g., Deci & Ryan, 2002; Grouzet, Kasser, Ahuvia, Dols, Kim, Lau, Ryan, Saunders, Schmuck, & Sheldon, 2005; Ryan & Deci, 2000; Sheldon, Ryan, Deci, & Kasser, 2004). According to self-determination theory, intrinsic goals are goals that serve to fulfill the basic needs of autonomy, relatedness, and competence whereas extrinsic life goals, such as fame, wealth, and appearance do not satisfy these needs. Note that this definition of intrinsic vs. extrinsic motivation differs from the one put forth in H. Heckhausen's motivation model (see also Rheinberg, 2006). However, despite these different definitions, self-determination theory would also conceive learning goals as intrinsic and status goals as extrinsic. Self-determination theory states that intrinsic goals further adaptation whereas extrinsic goals undermine it; and empirical studies support this claim (e.g., Bauer & McAdams, 2004; Emmons, 1991; Sheldon et al., 2004). However, these findings have been debated in the literature, as for instance reflected in the discussion whether the striving for financial success has a "dark side" (Kasser & Ryan, 1993, 1996) or not (e.g., Carver & Baird, 1998). For example, Nickerson, Schwarz, Diener, and Kahneman (2003) showed that the striving for financial success, a prime example of an extrinsic goal, yielded few if any negative effects on well-being. To date, self-determination theory has focused mainly on effects on well-being and not on the engagement in and disengagement from developmental goals. However, given the theory's general stance towards the adaptiveness of intrinsic (e.g., learning) and the maladaptiveness of extrinsic (e.g., status) goals, one may expect that the theory would also predict learning goals to promote and status goals to undermine goal engagement in the work domain.

More support for my hypothesis comes from research in educational psychology on mastery and performance goals in the achievement domain (Ames & Archer, 1988). Mastery goals are concerned with action outcomes (e.g., knowledge) whereas performance goals refer to action consequences (e.g., grades). These goals map onto the concepts of learning vs. performance goals (e.g., Dweck, 1986), task involvement vs. ego involvement (Nicholls, 1984), and also learning vs. status goals as considered in this thesis. Many studies show that these two types of goals have differential effects on motivation and performance. Mastery goals have

been shown to yield benefits relative to performance goals, but other studies have demonstrated that a combination of both goals can be most adaptive depending on what outcomes are considered in what contexts (see Baron & Harackiewicz, 2001; Elliot & Dweck, 2005; Harackiewicz, Barron, Tauer, & Elliot, 2002; Rawsthorne & Elliot, 1999; but see Midgley, Kaplan, & Middleton, 2001). In educational psychology, scholars have further differentiated between approach and avoidance goals, putting forth a 2*2 achievement framework (Elliot & McGregor, 2001). The present thesis, however, focused exclusively on approach goals.

Finally, organizational psychology has been concerned with learning vs. performance goals in work settings. Whereas previous research has demonstrated the benefits of learning goals, it has been suggested that performance goals may also yield positive effects under certain conditions (e.g., Locke & Latham, 2006). Importantly, von Rosenstiel, Kehr and Maier (2000) showed that the context-congruency of goals is decisive for their motivational functionality in a study on organizational entry. These findings provide further support for my prediction.

Self-Concordance of Goals

A second motivational antecedent of goal (dis-) engagement considered in this thesis is the extent to which individuals perceive their goals as congruent with their self. In the following I refer to this concept as *goal self-concordance* (Sheldon & Elliot, 1999).

The self is a category of central interest to Western psychology and culture, but its centrality is, historically seen, a relatively recent development (cf. Poulin et al., 2005; for reviews see Baumeister, 1991; Gergen, 1991). One way to think about the self is to conceive it as the source of goals and related regulatory processes (e.g., Brandtstädter, 2001). However, and this is the central proposition of the goal self-concordance model (Sheldon & Elliot, 1999), not all goals may be congruent (i.e., concordant) with the self. In fact, some goals may be forced upon the individual from outside, nevertheless representing “desired states” (just not truly desired by the self).

Specifically, Sheldon and Elliot (1999) differentiate between different types of goal motivation. They distinguish between external motivation (e.g., “because somebody else wants me to or because the situation seems to compel it”) and introjected motivation (e.g., “because I would feel ashamed, guilty, or anxious if I did not have this goal”) on the one hand and identified motivation (e.g., “because I really identify with this goal”) and intrinsic motivation (e.g., “because of the enjoyment or stimulation that this goal would provide me”) on the other

hand. This definition of intrinsic motivation overlaps with what would be identified as intrinsic motivation in H. Heckhausen's model of motivation. Note that introjected motivation has been discussed in detail by Kuhl (2001). Sheldon and Elliot (1999) posit that different forms of motivation may simultaneously be present; and they state that it is the relative strength of identified and intrinsic reasons over external and introjected reasons, which renders a goal more or less concordant with the self. Their goal self-concordance model posits that goal self-concordance fosters goal engagement, which then promotes goal attainment and well-being. To my knowledge, the goal self-concordance model has not been applied to developmental goals, which, however, is promising as developmental goals have been conceptualized as *internalized* developmental tasks (Heckhausen, 1999). The more an individual has integrated these normative challenges into his or her own self and made them his or her own "desired state", the more regulatory capacities should be available for the pursuit of this goal. Drawing from the proposition that work goals are central during the transition after university (more on this below), individuals who have made this normative demand to something they truly care about should also be more engaged in work goals. Again, I elaborate on this prediction in chapter 3.

Empirical studies have demonstrated that goal self-concordance indeed fosters goal engagement, goal attainment, and well-being although the effects have not always been unanimous (e.g., Bono & Judge, 2003; Judge, Bono, Erez, & Locke, 2005; Sheldon & Elliot, 1999). Another line of research, which offers support for the motivational functionality of self-defining (i.e., self-concordant) goals comes from symbolic self-completion theory (Wicklund & Gollwitzer, 1982; see Brunstein & Gollwitzer, 1996). However, diverging evidence comes from organizational psychology regarding the effects of self-set goals vs. assigned goals, which may have implications for the goal self-concordance model. Drawing from a meta-analysis Locke and Latham (2006) have argued that self-set goals do foster objective performance (which has been demonstrated) not because of their motivational but because of their cognitive effects.

In sum, both learning goals as well as work-related goal self-concordance may promote work-related goal engagement. In the previous section, I repeatedly referred to the importance of considering contextual opportunities and constraints in order to understand the effects of these aspects of motivation. The next chapter provides an overview of the contextual conditions during the transition from university to work.

2.3 The Transition from University to Work as Developmental Context

Human development takes place in context (e.g., Baltes, 1987; Bronfenbrenner, 1979; Elder, 1974; Heckhausen, 1999; Noack, 1990; Shanahan & Hood, 2000; Silbereisen et al., 1986; Silbereisen & Noack, in press). Thus, time and place are central aspects to consider in the study of human development. The following section provides an overview of contextual influences on human development followed by a discussion of life-span transitions in general and the transition from university to work in particular.

2.3.1 Contextual Influences on Human Development

What influences human development? In his taxonomy of contextual factors, Baltes (1987) differentiated between age-graded, history-graded, and nonnormative influences. Throughout the life span, age-graded biological, sociostructural, and normative influences regulate development by opening and closing windows of opportunity for attaining specific developmental goals (Heckhausen, 1999). For example, during the transition from university to work, sociostructural opportunities for a successful entry into work are plentiful, whereas little opportunities for work entry exist in old age. Besides, history-graded influences play a role in human development. They have been studied most intensively in the context of social change (e.g., Elder, 1974; for an overview see Silbereisen, 2005). Contemporary social change is characterized by increasing economic deregulation, which has important implications for entry into work life. Moreover, individual development may be affected by non-normative influences (Brim & Ryff, 1980; Wrosch & Freund, 2001), that is, by positive or negative events that are experienced by only few people. Finally, structural influences merit consideration. Gender, socioeconomic background, and educational attainment constitute cornerstones of inequality in many societies (Bourdieu, 2001; Bourdieu & Passeron, 1990; Schoon, Bynner, Heather, Parsons, Wiggins, & Sacker, 2002).

2.3.2 Life-Span Transitions

Life-span transitions are interesting times for the study of human agency. During such transitions, individual development typically is less constrained and scaffolded by external forces (cf. Caspi & Moffitt, 1993; Heckhausen, 2002; Lang, Reschke, & Neyer, 2006). Thus, individuals have more leeway to direct and shape their own development than before or after such transitions, although the range of options is, of course, not unlimited but “bounded” (Evans, 2007). The choices individuals make during life-span transitions may open up certain developmental paths and close others and thus have important consequences for the choices available in the future. This selective channeling into different developmental tracks has been discussed in detail by Heckhausen (1999; see also Waddington, 1957). Thus, during life-span transitions agency has important implications for future development as individuals may enter more or less favorable developmental trajectories. Finally, life-span transitions offer opportunities for both change (e.g., Wood, Tam, & Guerrero-Witt, 2005) as well as continuity and accentuation (cf. Caspi & Moffitt, 1993; Lang et al., 2006). From a person-centered perspective (cf. Magnusson, 1998), one may expect individuals to change in different directions across life-span transitions. Some may increase in aspects of functioning, others may decrease, whereas some may remain stable.

Developmental psychologists have long been interested in life-span transitions (for an overview see Lang et al., 2006) and have studied for example transitions during school (e.g., Eccles, Midgley, Wigfield, Buchanan, Reuman, Flanagan, & Mac Iver, 1993), transitions to marriage and parenthood (e.g., Salmela-Aro, Nurmi et al., 2001), transitions in old age (e.g., Kling, Ryff, Love, & Essex, 2003), and work-related transitions including the transition from school to work. The work of Silbereisen and colleagues demonstrates that these transitions in turn are affected by social change, which underscores the contextual embeddedness of human development (for an overview see Silbereisen, 2005; e.g., Haase, Silbereisen, & Reitzle, in press-b; Pinguart & Silbereisen, 2004; Reitzle & Silbereisen, 2000). This literature cannot be reviewed here, but a common theme in many of these studies has been the idea that human agency plays a central role in how individuals master such transitions.

2.3.3 The Transition from University to Work

Work and love have been described as the central developmental tasks of adulthood (Freud, 1930/1994). The present thesis – focusing on development during a work-related life-span transition – focused on the former task, on work. In the following, I discuss whether work is still a central life domain today. I proceed to review empirical studies on the school-to-work

transition, which demonstrate the central role of human agency. Furthermore, I provide information on the context present during the transition from university to work.

The End of Work?

In her famous book *The Human Condition* (1958), Hannah Arendt stated that “The modern age has carried with it a theoretical glorification of labour and has resulted in a factual transformation of the whole society into a labouring society” and continued to add that “What we are confronted with is the prospect of a society of labourers without labour, that is, without the only activity left to them. Surely, nothing could be worse” (p. 4-5). Rifkin (1995) developed this argument further speaking of “the end of work”. Today, economic uncertainties are on the rise across the globe. Labor markets have become increasingly deregulated, which is reflected in increasing job uncertainty, a proliferation of underemployment, increasing unemployment, and increasing discontinuities in individual career trajectories (e.g., Organization for Economic Co-operation and Development, 2003). “Precarious” employment situations have recently received considerable attention in the social sciences (e.g., Dörre, 2005). Young people – the “losers in a globalizing world” – appear particularly vulnerable to economic uncertainties according to a large 14-nations study (Blossfeld et al., 2005).

However, the rising difficulties to “make it” in the world of work have not resulted in a decreasing importance of work, neither at a subjective nor an objective level (e.g., Shanahan, Mortimer, & Krüger, 2002; Vondracek, Lerner, & Schulenberg, 1986; Vondracek & Porfeli, 2003). Objectively, work is still one of the central domains of adult socialization with a “long arm”, which branches out to virtually all life domains (e.g., Kohn & Schooler, 1983; Nurmi & Salmela-Aro, 2002; Pulkkinen, Feldt, & Kokko, 2006; Roberts, Walton, Bogg, & Caspi, 2006; Schulenberg, Bryant, & O’Malley, 2004). The importance of work becomes particularly apparent considering the harmful effects of unemployment (cf. Jahoda, Lazarsfeld, & Zeisel (1975/1933) on mental health (e.g., Kokko, Pulkkinen, & Puustinen, 2000; Dooley, Prause, & Ham-Rowbottom, 2000) and even life expectancy (Morris, Cook, & Sharper, 1994). The objective importance of work is mirrored in the subjective importance individuals attach to work (e.g., Kalakoski & Nurmi, 1998). As was argued earlier, work is one of the central routes through which individuals attain and enlarge their primary control potential. Put simply, work earns you money. However, work also appears to be central for personal development and social integration (cf. Tomasik, 2007).

The Importance of Agency

The school-to-work transition, thus, is a central life-span transition in many societies (e.g., Blustein, 1999; Lent & Worthington, 1999; Nurmi & Salmela-Aro, 2002; Vondracek et al., 1986). Various studies provide evidence for the importance of individual agency during this transition. Drawing from the action-phase model of developmental regulation, Heckhausen and colleagues have investigated in two longitudinal studies how individuals in Germany and the US navigate the transition from school to work.

Supporting central assumptions of the model, these studies have yielded rich insight into the dynamics, antecedents, and effects of developmental regulation and the contextual embeddedness of these processes. Heckhausen and Tomasik (2007) showed how German adolescents adjusted their vocational aspirations towards increasing realism when approaching the developmental deadline of school graduation. Whereas in Germany realistic goal adjustment appeared most adaptive (see also Hardy, Tomasik, Heckhausen, & Haase, 2007) overambition was highly adaptive in the US: Here, overambitious individuals obtained the best developmental outcomes indicated by objective measures of educational attainment four years later (Heckhausen, Chang, & Lessard, 2007). Other studies have focused on the effects of goal engagement. Goal engagement was an important predictor of well-being and objective transition success in Germany (Haase, Heckhausen, & Köller, in press-a) as well as in the US (Haase, Heckhausen, Poulin, & Chang, 2007). Yet, the relevant goals varied across contexts: Whereas career goals were adaptive in the German study (middle-tier school sample transitioning into vocational education), education goals were adaptive in the US study (high-school sample transitioning mostly into college). Other publications provide insights into the adaptive functions of worry-related cognitions in fostering goal engagement (Nagy, Köller, & Heckhausen, 2005), the interaction of coping and processes of developmental regulation after critical life events (Poulin & Heckhausen, in press), and how life goals varied across different ethnic groups in the US sample (Chang, Chen, Greenberger, Dooley, & Heckhausen, 2006).

Besides these studies, which draw directly from the action-phase model, further studies point to the importance of career exploration (Kracke, 2002), self-efficacy (Pinquart, Juang, & Silbereisen, 2003), prioritizing work-related goals (Nurmi & Salmela-Aro, 2002; Nurmi, Salmela-Aro, & Koivisto, 2002), and adaptive attributions (Määttä, Nurmi, & Majava, 2002) for mastering the transition from university to work – all aspects of adaptive goal engagement. Further studies provide evidence on the importance of proactivity – see a meta-analytic review by Kanfer, Wanberg, and Kantrowitz (2001) – and “grit” (Duckworth, Peterson, Matthews, & Kelly, 2007), that is perseverance and passion for long-term goals, for work success. Both the

concepts of proactivity and grit share similarities with global goal engagement. In sum, all these studies point to the importance of agency processes in mastering work-related transitions, both in terms of subjective as well as objective adaptation (see also Wiese et al., 2002).

High- vs. Low-Opportunity Contexts

Most of the studies presented above focused on the transition into work after high school. Insight into the specific context during the transition from university to work in Germany comes primarily from non-developmental fields. Graduate surveys document the opportunities and constraints during the transition from university to work, for example European graduate surveys CHEERS and REFLEX (e.g., Schomburg, 2007; Teichler, 2007), the nationally representative Higher Information System (HIS) German graduate panel (e.g., Briedis & Minks, 2004), graduate surveys at single universities (e.g., Abele, 2003; Kremkow & Pastohr, 2006), or within single fields (e.g., Schneller & Schneider, 2005). Particularly the comparative studies underscore how employment opportunities differ notably across different fields of study. Whereas graduates in some fields of study have good opportunities to attain employment, for example in medicine and psychology, others face rather unfavorable opportunities, for example in architecture and the humanities. These varying employment opportunities are of importance in the present thesis. One of my central questions was whether the model I put forth (see below) would work similarly across high- vs. low-opportunity contexts.

Opportunities for Learning vs. Status Attainment

Although employment opportunities differ across fields of study, some constraints are present for most individuals navigating the transition from university to work. As was mentioned above, youth are particularly affected by economic deregulation (Blossfeld et al., 2005). In Germany, the catch phrase “Generation Praktikum” (generation internship; Stolz, 2005) has been coined referring to university graduates who face increasing difficulties to enter secure employment and are instead channeled into fixed-contract internships with little or no pay. Thus, even in fields with favorable job prospects, opportunities to attain secure, not to speak of high-status positions, are limited.

On the other hand, research on organizational entry has provided insights into processes fostering newcomer adaptation (e.g., Ashford & Black, 1996; Chan & Schmitt, 2000; Kammeyer-Mueller & Wanberg, 2003; Maier & Brunstein, 2001; von Rosenstiel, Kehr, &

Maier, 2000). These studies do not only provide further evidence regarding the importance of agency. They often emphasize the new roles, tasks, social relations, and organizations newcomers come across during the transition. That is, they highlight the broad opportunities for developing skills and learning, which are present during the transition.

A Note on Emerging Adulthood

For many individuals, the transition from university to work takes place during what Arnett (2000) has called emerging adulthood. Emerging adulthood captures the period from the late teens through the twenties and is conceptualized as a “distinct period demographically, subjectively, and in terms of identity explorations” (p. 469). According to Arnett (2000), emerging adults perceive themselves neither as adolescents nor adults and are highly engaged in identity exploration – once a typical developmental task of adolescence (Erikson, 1959). Emerging adulthood has become a prominent concept in developmental psychology, yet, scholars have criticized it on various accounts (e.g., Heckhausen, 2003; Shanahan & Longest, 2007). Empirical findings show that individuals increasingly postpone their entry into fixed employment (Blossfeld et al., 2005). However, one may wonder whether the delayed entry into work indeed reflects identity exploration or rather the economic troubles to which young people are particularly exposed.

In sum, during young adulthood, individuals face various developmental tasks (see also Noack & Buhl, 2004). In this thesis, I focused on work as a developmental goal, which is central for many individuals in contemporary societies. During the transition after university, work-related goals are especially salient. Studies show that entry into the world of work has become increasingly difficult due to economic deregulation; and they point to the importance of individual agency for subjective as well as objective transition adaptation. Moreover, empirical findings show that the transition from university to work – at least in Germany – constitutes a context with little opportunities to immediately attain high social status and prestige (cf. Blossfeld et al., 2005) and many opportunities to attain learning goals. Finally, whereas immediate access to high-status positions is limited for most individuals, opportunities to attain any employment at all differ, notably so, across fields of study (e.g., Briedis & Minks, 2004). Bearing these contextual conditions in mind, I want to go back to the initial question, which motivated this thesis: (How) can individuals bring about adaptive outcomes during the transition from university to work? In order to investigate this question, I put forth an empirical study. Aims and hypotheses of this study are presented in the next chapter.

3 The Present Study

In the previous chapter, I introduced the concepts of agency, adaptation and development, presented the action-phase model of developmental regulation, and provided insight into the developmental context under study. Spurred by the question whether and how individuals can bring about adaptive outcomes in their development themselves during the transition from university to work, I conducted a 4-wave longitudinal study involving 523 German university graduates from four fields of study with favorable and unfavorable employment opportunities. Graduates were surveyed every 4 months starting at graduation until one year after graduation. In the following section, I introduce the aims of this study and my hypotheses.

3.1 Aims

The aims of the present study were four-fold. First, capitalizing on the longitudinal study design I sought to examine how individuals changed during the transition from university to work. Drawing from a plasticity perspective on human development (e.g., Baltes, 1987), changes in all aspects under investigation were expected. From the perspective of life-span developmental psychology, this may seem evident, but strong claims have been made in other fields that some of the psychological aspects considered here are, in fact, stable. Moreover, I was able to examine reverse effects in order to better understand bidirectional dynamics, which have rarely been addressed previously. Finally, I was not only interested in merely describing change, but I sought to understand what predicted these changes and focused on the role individuals played themselves in bringing about these changes.

Thus, a second aim of the study was to gain a closer understanding of the role of human agency. Drawing from the action-phase model of developmental regulation (Heckhausen, 1999) goal engagement and goal disengagement were studied as prime examples of agency processes. Studying the transition from university to work, I focused on engagement and disengagement with regard to work as a central on-time developmental goal. Goal engagement and disengagement are summarized throughout the following thesis as work-related OPS, indicating their origin in the OPS model (OPS, Heckhausen, 1999). On the one hand, effects of goal engagement and goal disengagement on outcomes of adaptation were of interest. On the other hand, I sought to understand what predicted interindividual differences in these processes. This research field is still in its infancy (Heckhausen & Heckhausen, 2006). Life goals and goal self-concordance (Sheldon & Elliot, 1999) – the predictors considered in this thesis and summarized as motivational orientations – have previously not been examined.

Third, I was interested in whether and how agency fostered adaptive development (cf. Seligman & Csikszentmihalyi, 2000). Thus, maladaptive and problematic developmental trajectories were not considered. Heckhausen and Schulz (e.g., Heckhausen, 1999; Schulz & Heckhausen, 1996) conceive the maximization of one's long-term potential for primary control as the central criterion of adaptive development. Studying short-term effects – the longitudinal study covered one year –, I chose to consider multiple criteria of adaptation as potential routes to (long-term) primary control. Specifically, life satisfaction, positive and negative affect were considered as indicators of subjective well-being (Diener, 2000) and purpose in life, autonomy, and positive relations as aspects of psychological well-being (cf. Ryff & Keyes, 1995). Regarding work adaptation, both subjective as well as objective

indicators were included, the former referring to work satisfaction and progress towards work goals, the latter to employment and income.

Fourth, I followed a context-sensitive perspective (e.g., Silbereisen et al., 1986) and sought to systematically compare my model across high vs. low-opportunity contexts. Specifically, employment prospects – varying by field of study – were regarded as proxies of high- vs. low-opportunity contexts. Moreover, I considered contextual conditions, which were presumably present for most graduates during the transition, specifically, the centrality of work goals and the differential opportunities for attaining learning vs. status goals.

Figure 3.1 provides an overview of the conceptual model. This figure is provided to make the reader familiar with the constructs and associations considered in this thesis. An important note needs to be made. I did not aim to test this model as a whole in a structural-equation-modeling fashion. I sought to understand the dynamic and complex interplay between the different aspects considered in the model putting forth a series of bivariate analyses. Considering the manifold associations that emerged between only two variables – directional effects, reverse effects, moderator effects, all of which will be presented below – I consider the test of the whole model as a question for future research.

Moreover, a general note on bidirectional dynamics is warranted. In the present thesis I formulated predictions on directional effects of a construct A on another construct B, but I also considered reverse effects of B on A. In principle, two patterns of bidirectional dynamics are possible: (1) Positive feedback loops where two constructs, A and B, have a mutual and positive influence on each other across time. Such positive feedback loops have been referred to as Matthew effects (Merton, 1960), upward spirals (Sheldon & Houser-Marko, 2001), or accentuation effects (Caspi et al., 2005). However, (2) negative feedback loops are also possible, where A has a positive effect on B while B has a negative effect on A. Such negative feedback loops constitute homeostatic processes and can be found in variety of motivational phenomena. As systematic research is rare, I explored bidirectional dynamics including reverse effects without formulating specific hypotheses.

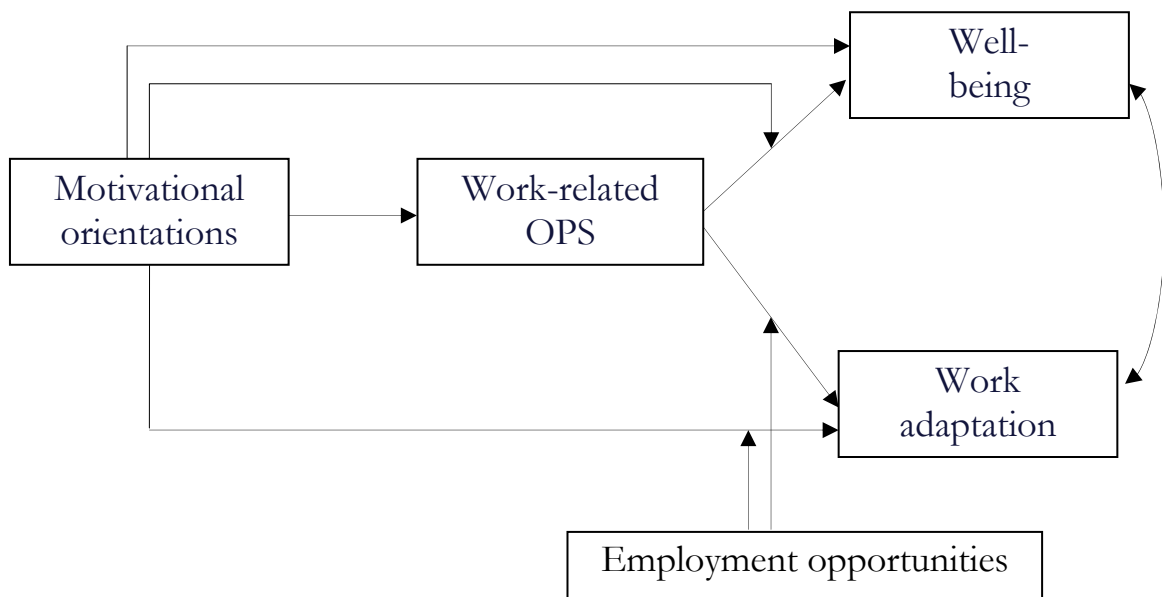


Figure 3.1. Conceptual model

Note. See text for the specific hypotheses.

3.1 Hypotheses

3.1.1 Do Individuals Change? (Hypothesis 1)

The starting point of my inquiry was the assumption that individuals would change after graduation building on the premise that development is malleable (e.g., Baltes, 1987; Lerner, 1996), particularly during life-span transitions (Heckhausen, 1999). As was argued above, during transitions individual development is less constrained, which yields opportunities for upward as well as risks for downward development.

Thus, *interindividual differences in intraindividual change* across time were expected. That is, individuals were expected to change in different directions following unique developmental pathways. This perspective embraces both continuity and change as it implies that some individuals may remain stable whereas others increase or decrease in the aspects of psychological functioning under consideration. Note that interindividual differences in intraindividual change do not always emerge in empirical studies. For example, Chan and Schmitt (2000) found no such differences, maybe because their sample was rather small, but also maybe because the context under study (entry in one organization) imposed strong constraints on individual development leaving no leeway for variability. Moreover, *mean-level changes* were explored. That is, I investigated whether individuals followed shared developmental pathways across time. These analyses were exploratory as the existing literature was rather thin.

These change assumptions contrast with stability claims, which have been made in other fields. In personality psychology, it has been argued that people change little beyond the transition into adulthood. Borrowing the term from William James, Costa and McCrae (1994) claimed that personality is “set like plaster” after adulthood is reached. They later softened their claim (Costa & McCrae, 2006); and recent empirical evidence offers support for a life-span developmental view of personality change, even at the trait-level (Caspi et al., 2005; Helson, Kwan, John, & Jones, 2002; Roberts, Walton, & Viechtbauer, 2006; Srivastava, John, Gosling, & Potter, 2003). Goals have often been conceptualized as personality aspects (Little, 1996; McAdams, 2006), which are more prone to change than traits. A number of studies has shown the malleability of *life goals*. Roberts et al. (2004) found decreases in all major life goals during college whereas Sheldon (2005) found large shifts away from extrinsic and minor shifts towards intrinsic life goals during college. Research on how life goals change after university is largely absent (cf. Roberts et al., 2004), but indirect evidence on possible changes comes from

Helson et al. (2002) who found that dominance traits – which may be related to status goals – peak in middle adulthood. Thus, it was safe to assume interindividual differences in intraindividual change, but whether mean-level trends would emerge was not clear.

The same was true for the *self-concordance of work goals*. Self-determination theory posits an increase in autonomous motivation across the life span (Sheldon, Kasser, Houser-Marko, Jones, & Turban, 2005) drawing from Rogers' (1951) concept of the organismic valuing process. However, to date, no longitudinal studies are available, neither for changes in global nor domain-specific goal self-concordance.

Likewise, few longitudinal studies have addressed changes in *goal engagement and goal disengagement* (but see Rothermund & Brandtstädter, 2003) and none of them has addressed changes in work-related goal (dis-) engagement so far (cf. Poulin et al., 2005). However, the action-phase model postulates a process perspective on developmental regulation: Goal engagement and disengagement change with waxing and waning opportunity structures for goal attainment. Thus, change should be present in these processes, at least at the intraindividual level.

Concerning *well-being*, the first domain of adaptation, surprisingly little research has examined changes in well-being, maybe because of pessimism fostered by assumptions of genetic determinism and the hedonic treadmill model (cf. Lyubomirsky, Sheldon, & Schkade, 2005). However, recent studies do not support the claim (cf. Lykken & Tellegen, 1996) that well-being is stable (e.g., Diener, Lucas, & Scollon, 2006; Fujita & Diener, 2005; Lucas, 2007). Findings show that individuals become more satisfied with life (Mroczek & Spiro, 2005) and more emotionally stable as they grow older (cf. Roberts et al., 2006; but see Mroczek & Kolarz, 1998). Caspi et al. (2005) called this the maturity principle: People become increasingly well-adjusted over the life span. Regarding psychological well-being, cross-sectional data show that purpose in life tends to decrease whereas autonomy increase and positive relations increase or remain stable with increasing age (Ryff & Keyes, 1995).

Finally, regarding *work adaptation*, the second domain of adaptation considered here, it is relatively safe to assume overall improvements. Findings show that individuals improve their employment status and income after graduation (Teichler, 2007), and, presumably, also their work satisfaction and progress towards work goals.

Hypothesis 1

In sum, individuals were expected to change in different directions during the first year after graduation from university. That is, interindividual differences in intraindividual change were

posited. Moreover, mean-level changes were explored. That is, I examined whether individuals followed shared developmental pathways across time.

3.2.2 Motivational Orientations and Work-Related OPS (Hypothesis 2)

The assumption that individuals would change during the transition from university to work was at the core of the following hypotheses, which focused on the prediction of these changes. These hypotheses drew from the action-phase model of developmental regulation (Heckhausen, 1999), which was introduced earlier. At the heart of my model (see Figure 3.1) were processes of work-related goal engagement and goal disengagement. In hypothesis 2, two sets of motivational antecedents were considered, both of which have not been examined previously.

First, life goals pertaining to *learning and status* were the first set of motivators considered. Learning vs. status goals are examples of intrinsic vs. extrinsic goals, respectively, in the context of work-related developmental regulation (cf. Heckhausen & Heckhausen, 2006). Whereas learning goals were expected to promote goal engagement and to prevent goal disengagement, no such effects were assumed for status goals. During the transition from university to work, opportunities to attain learning goals are high, whereas opportunities to attain status goals are limited (Blossfeld et al., 2005). Thus, only learning goals as context-congruent goals were expected to motivate sustained work-related goal engagement whereas status goals were not. Note that status goals were assumed to have no effect, alone or in conjunction with learning goals, which is why no interactive effects of learning and status goals were expected. These predictions, which are based on the action-phase model, partly diverge from assumptions by self-determination theory (e.g., Ryan & Deci, 2000). Although motivational effects have not received much attention, self-determination theory would probably also posit that learning goals hold motivational functionality. In contrast, status goals probably would be expected to be maladaptive.

The second motivator of goal (dis-) engagement considered was the *self-concordance of work goals*. Linking the action-phase model (Heckhausen, 1999) to the goal self-concordance model (Sheldon & Elliot, 1999) I predicted that higher self-concordance of work goals would promote work-related goal engagement and prevent goal disengagement. Empirical findings support this prediction (e.g., Bono & Judge, 2003; Judge et al., Sheldon & Elliot, 1999; see also Brunstein & Gollwitzer, 1996). However, contradicting findings come from organizational contexts (Locke & Latham, 2006).

Finally, *reverse effects* of work-related goal engagement on motivational orientations deserve consideration. Do motivational orientations affect goal (dis-) engagement or vice versa? For example, reverse effects of goal engagement on goal self-concordance are possible due to processes of dissonance reduction (e.g., Festinger, 1957). Individuals may become more identified with a goal when they invest a lot of time and effort in pursuing this goal, thus, they may increase the self-concordance of their goal because they invested a lot.

Hypothesis 2

In sum, learning goals were expected to promote goal engagement and prevent goal disengagement with regard to work goals during the transition whereas status goals were not expected to yield such effects. Moreover, goal self-concordance was expected to promote engagement and to prevent disengagement with regard to work goals. I tested whether the effects held across high vs. low opportunity-contexts and I explored reverse effects.

3.2.3 Work-Related OPS and Well-Being (Hypothesis 3)

Now that hypotheses on antecedents of work-related engagement and disengagement were formulated, the effects of goal engagement and disengagement were considered in the next step. Hypothesis 3 focused on the effects on well-being.

To date, numerous empirical studies drawing from the action-phase model have established the benefits of on-time goal engagement for *subjective well-being* (e.g., Heckhausen et al., 2001; Lang & Heckhausen, 2001; Wrosch & Heckhausen, 1999). This study extended this literature by also considering effects on *psychological well-being*, specifically, on purpose in life, autonomy, and positive relations. Whereas positive effects on the two former aspects appear plausible, one may wonder about the effects of work-related goal engagement on positive relations. This prediction can be challenged in view of the potential for work-family conflict (e.g., Greenhaus & Beutell, 1985), but I assumed a positive spill-over effect. Pursuing normative goals is socially rewarded (e.g., Havighurst, 1976); and if work-related goal engagement fosters adaptation in the work domain this may spill over to other life domains as has been shown by Salmela-Aro (2007).

Moreover, goal engagement and disengagement are distinct processes of developmental regulation (Heckhausen, 1999); and the effects of *goal disengagement* deserve special consideration. When individuals use compensatory secondary strategies in order to disengage from developmental goals, they essentially aim to ameliorate unhappiness brought about by unsuccessful goal pursuit in order to protect their long-term motivational resources

(Heckhausen, 1999). The effectiveness of these strategies has been impressively documented with regard to the disengagement from off-time developmental goals (e.g., Heckhausen et al., 2001; Wrosch et al., 2003). However, does goal disengagement yield similar ameliorating effects when it is directed at an on-time goal or does it make matters even worse? I posited this as an open question.

In addition, I was interested in the differential effects on positive and negative affect to unravel the *motivational effects of learning goals on goal engagement* put forth in hypothesis 2. I suggested that the affective benefits derived from goal engagement depend in part on the underlying motivational orientations. This idea rests on the proposition that goal striving inevitably brings about failure and setbacks when desired outcomes are not attained, which is a central assumption of the action-phase model (Heckhausen, 1999). When goal engagement in the transition is colored by the broader life goal of attaining high social status, such engagement should involve more failure experiences – as not many opportunities are provided to attain this goal – and consequently provide little affective benefits. In contrast, when work-related goal engagement is embedded in an individual's orientation towards skill development and growth (learning) affective benefits should be particularly pronounced. These proximal affective benefits are assumed to constitute one mechanism behind the motivating effects of learning goals. Whereas the same mechanism applies to goal self-concordance is an open question.

Moreover, all effects were systematically compared across *high- vs. low-opportunity contexts*. Such comparisons have seldom been made, but Haase et al. (in press-a) found that goal engagement fostered positive affect during the transition from school to work regardless of whether opportunities for goal attainment were bright or gloomy.

Finally, referring to Schulz and Heckhausen (1997) *reverse effects* of well-being on goal engagement and goal disengagement were studied. As was stated earlier, well-being is an important resource for motivation and volition. Particularly positive affect may have the potential to “broaden and build” (Fredrickson, 2001) thought and action repertoires, which may result in positive feedback loops between goal engagement and positive affect (see also Lyubomirsky et al., 2005). Regarding negative affect, predictions diverge. On the one hand, negative affect may spur goal engagement as demonstrated by Nagy et al. (2005). On the other hand, long-term negative affect may bring about goal disengagement (Klinger, 1975; Nesse, 2000).

Hypothesis 3

In sum, work-related goal engagement was expected to promote both subjective as well as psychological well-being. I was unsure whether work-related goal disengagement would promote or harm well-being. Moreover, overall affective benefits of goal engagement were expected; and they were assumed to be particularly pronounced under high learning goals. Reverse effects were explored as well as whether the effects held across high- vs. low-opportunity contexts.

3.2.4 Work-Related OPS and Work Adaptation (Hypothesis 4)

Whereas many previous studies drawing from the action-phase model have demonstrated benefits for well-being, objective outcomes have been less frequently studied, maybe because their attainment may be strongly influenced by contextual constraints and less so by individual agency (cf. Evans, 2007).

However, the few existing studies demonstrate that on-time goal engagement indeed promotes objective outcomes in the work domain (e.g., Haase et al., in press-a; Hardy et al., 2007). Other studies not drawing from the action-phase model provide further evidence for the positive effects of proactivity (e.g., Kanfer et al., 2001; Saks & Ashforth, 1999; Wanberg, Glomb, Song, & Sorensen, 2005), “grit” (Duckworth et al., 2007), career-related motivation (Pinguart et al., 2003), prioritizing work-related goals (Nurmi et al., 2002), and adaptive attributions (Määttä et al., 2002) on objective indicators of work adaptation. All these concepts overlap to some extent with global or work-related goal engagement. It can be assumed that when goal attainment is not completely under the control of contextual forces, individual engagement should make a difference. Thus, I expected work-related goal engagement to promote objective and also subjective aspects of work adaptation.

The effects of *goal disengagement*, again, deserve special consideration. Whereas I expected goal disengagement to have a negative effect on objective indicators, I was less sure about the effects on subjective indicators. Maybe individuals who used disengagement strategies eventually became satisfied with their situation and perceived high progress towards their work goals, which they had adjusted downwardly?

Until now, I did not expect differences in the hypothesized relationships in *high- vs. low-opportunity contexts*, but here a moderating effect of contextual opportunities on links between goal (dis-) engagement and objective indicators of work adaptation was assumed. The action-phase model posits that goal engagement becomes decisive when opportunities for goal attainment become scarce, due to temporal (i.e., deadline) or structural constraints. Haase et al.

(in press-a) demonstrated this effect for girls in Germany who generally face unfavorable employment opportunities, but could markedly improve their chances to attain an apprenticeship when they were highly engaged in their work goals. Thus, I expected goal engagement effects to be particularly strong when employment opportunities were unfavorable.

Finally, I considered *reverse effects* of work adaptation on work goal (dis-) engagement. The action-phase model (Heckhausen, 1999) posits a negative feedback loop: When opportunities for goal attainment become relatively scarce, for example when individuals approach a developmental deadline or under structural constraints, they should engage even more strongly in their goals.

Hypothesis 4

In sum, work-related goal engagement was expected to promote both objective as well as subjective aspects of work adaptation. Work-related disengagement was assumed to negatively affect objective indicators of work adaptation, but I was unsure about effects on subjective indicators. Employment opportunities were expected to play a moderating role: Goal (dis-) engagement effects were expected to be stronger under unfavorable employment opportunities. Reverse effects were explored.

3.2.5 Motivational Orientations and Well-Being (Hypothesis 5)

The last two hypotheses concerned the direct effects of motivational orientations on outcomes of adaptation. Hypothesis 5 focused on the effects on well-being.

First, the effects of *learning and status goals* were studied. How intrinsic and extrinsic goals affect well-being has been of fundamental interest to self-determination theory (e.g., Ryan & Deci, 2000). Many studies drawing from this theory have shown that intrinsic goals promote well-being whereas extrinsic goals undermine it (e.g., Kasser, 1993, 1996; Sheldon et al., 2004). However, these findings have not gone unquestioned (e.g., Carver & Baird, 1998). Drawing from the action-phase model (Heckhausen, 1999) learning goals as context-congruent goals were expected to promote well-being whereas no such effects were assumed for the context-incongruent status goals. Status goals, however, were also not expected to be harmful as the transition context did not punish these goals.

Second, effects of *work-related goal self-concordance* were considered. The goal self-concordance model predicts that higher (global) goal self-concordance fosters well-being; and empirical findings support this claim (e.g., Sheldon & Elliot, 1999; Sheldon et al., 2004).

Applying the model to the engagement in a specific developmental goal, I expected similar effects. Research on goal self-concordance in organizational contexts has demonstrated benefits for work as well as life satisfaction (Bono & Judge, 2003; Judge et al., 2005).

What is unclear, however, is whether goal self-concordance also motivates goal engagement in *contexts*, which offer unfavorable opportunities for goal attainment. Consider that a “person who cares about something is, as it were, invested in it. He identifies himself with what he cares about in the sense that he makes himself vulnerable to losses and susceptible to benefits” (Frankfurt, 1982, p. 266). Thus, goal self-concordance may undermine well-being in the face of persistent obstacles. Systematic comparisons across high- vs. low-opportunity contexts have not been made so far. Finally, I again examined *reverse effects*, where two different patterns of bidirectional dynamics were possible – positive and negative feedback loops.

Hypothesis 5

I expected learning goals and work-related goal self-concordance to promote well-being whereas no such effects were assumed for status goals. Reverse effects were explored as well as whether the effects held across high- vs. low-opportunity contexts.

3.2.6 Motivational Orientations and Work Adaptation (Hypothesis 6)

Finally, I was interested in the direct effects of motivational orientations on work adaptation. First, *learning and status goals* were examined. In principle, both learning and status goals may foster work adaptation as McClelland (1961, 1975) has shown impressively in his research on achievement and power motivation and economic success. During the transition from university to work, I expected positive effects of learning goals and no effects of status goals, drawing again from the context-congruency argument put forth earlier. Support for these predictions comes from organizational psychology where learning goals were found to promote objective performance whereas performance goals did not have such effects (see Locke & Latham, 2006). Note, however, that in educational contexts performance goals were found to have positive effects on objective outcomes (Harackiewicz et al., 2002).

Second, effects of *work-related goal self-concordance* were considered. The goal self-concordance model (Sheldon & Elliott, 1999) posits that goal self-concordance fosters goal attainment. Thus, positive effects were expected on objective as well as subjective indicators of work adaptation. However, Sheldon and Elliot (1999) focused only on subjective goal

attainment. Research in organizational psychology provides evidence that goal self-concordance fosters performance, although the effects have not been unanimous (Bono & Judge, 2003; Judge et al., 2005).

Moreover, *contextual conditions* were again considered as a moderator using the same line of argumentation presented above: Under unfavorable opportunities, motivational orientations were assumed to have a stronger impact on work adaptation.

Finally, *reverse effects* were studied. Evidence for bidirectional influences between personality and work experiences in young adulthood comes from the Dunedin longitudinal study (Roberts, Caspi, & Moffitt, 2003). Again, drawing from the action-phase model (Heckhausen, 1999), one may expect a negative feedback loop, where specific motivational orientations (i.e., learning goals, self-concordance of work goals) foster work adaptation whereas a lack of work adaptation may bring individuals to change their motivational orientations in more adaptive directions. However, Sheldon and Houser-Marko (2001) found a positive feedback loop with goal self-concordance fostering goal attainment and vice versa.

Hypothesis 6

Learning goals and work-related goal self-concordance were expected to promote work adaptation whereas no such effect was assumed for status goals. Employment opportunities were expected to play a moderating role: Effects were expected to be stronger under unfavorable employment opportunities. Reverse effects were explored.

4 Method

This chapter provides an overview of the methodological background of the present study (PI: Claudia M. Haase & Rainer K. Silbereisen). Data for this study were collected online. The sample consisted of 523 university graduates who were followed in a 4-wave longitudinal study until one year after graduation. Participants from four selected fields of study were recruited in order to compare graduates from fields with favorable (i.e., medicine, psychology) vs. unfavorable (i.e., architecture and humanities) employment prospects. In the following sections, I first discuss considerations in web-based research. Then, I present the sample, measures, and design of the study. Finally, I provide information on the semi-structured interviews that were conducted with 15 participants. This chapter closes with a short summary.

4.1 Considerations in Web-Based Research

In recent years, the internet has widely gained importance in academia (e.g., Birnbaum, 2004; Tourangeau, 2004). Following this trend, new scholarly journals, such as *CyberPsychology and Behavior*, and scientific societies, such as the German Society for Online-Research, are emerging. Web-based research is attractive as it allows for highly standardized data collection at low costs. Traditional inconveniences of survey research, for example false data entry, can be avoided as data are directly exported into electronic files. In the present study, web-based data collection appeared particularly attractive in order to follow graduates with presumed high geographical mobility across time. For these reasons, data for the present study were collected online. However, ethical and security questions need consideration as well as potential sampling biases and measurement issues. In the following, I briefly discuss these challenges and how they were addressed in the present study.

Ethical Considerations

Ethical concerns (see Nosek, Banaji, & Greenwald, 2002) in web-based research pertain to the protection of minors, the information of participants and their debriefing. In the US, the Children's Online Privacy Protection Act regulates the online privacy of children under 13 (CORPA, 1998). Following suggestions by Nosek et al. (2002) participant recruitment hence targeted exclusively university graduates.

Second, the absence of the researcher from the study requires thoughtful information and debriefing procedures. In the present study, the website provided full information on the study including a section with FAQ (frequently asked questions). The participants were encouraged to contact me as the principal investigator of the study in case of questions. Adequate debriefing was ensured as all study participants provided their email addresses and received information letters every six months. These information letters were also sent to secure compliance and retention. Finally, the absence of the researcher may not only be seen as a disadvantage but as an asset of online research, which may diminish social desirability effects (Nosek et al., 2002).

Security Considerations

In a longitudinal study participants inevitably need to disclose their contact information in order to enable follow-up data collection. Following Nosek et al. (2002), in the present study, anonymity was ensured by separating the electronic contact information files from the

questionnaire files, by assigning meaningless labels to all items, by using a secure server, and by removing all data from the website after the study had ended. Thus, data transmission and storage were indented to ensure confidentiality and anonymity.

Sampling Considerations

In web-based studies, some sampling issues merit consideration (Birnbaum, 2004). First, the sample may be biased as not everyone can access the study. However, the “digital divide” (e.g., DiMaggio, Hargittai, Neumann, & Robinson, 2001) was not a concern in the present study as university graduates can be assumed to be the forerunners regarding Internet access and literacy. However, self-selection processes (Birnbaum, 2004) may well result in biased samples, a problem that is, however, not pertinent to web-based research exclusively. In the present study, it was possible to examine sample selectivity as will be seen later.

Second, according to Birnbaum (2004) web-based research yields larger drop-out rates. This is an important concern, particularly in a longitudinal study. I took particular care to minimize drop-out. Following Birnbaum (2004) a “high hurdle technique” was implemented. That is, participants provided their contact information at the beginning of the study, received a password upon registration by email, and could only access the questionnaire by password. These hurdles were expected to screen out nonserious participants early in the study. Moreover, methods known to increase retention rates in the longitudinal follow-up were used. Participants received thank you mails upon completion of the questionnaire, e-mail reminders as well as information letters, and they could win gift certificates. Finally, I sought to keep the questionnaire as short as possible. Through these efforts I hoped to minimize drop-out drawing from other successful longitudinal web-based studies (e.g., Hiskey & Troop, 2002; Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002).

Third, web-based research carries some deceit risks. For example respondents may deliberately provide false data or fill out questionnaires multiple times (Birnbaum, 2004; Nosek et al., 2002). In the present study, I attempted to screen out nonserious respondents and to exclude multiple submissions using the high hurdle technique introduced above. Moreover, I monitored data collection closely throughout the whole study and inspected the data regularly. I did not obtain evidence for deliberate deceit.

Measurement Considerations

Finally, when using scales that have been developed as paper-and-pencil measures in web-based research, questions of measurement comparability arise. Systematic comparisons of

paper-and-pencil and online presentation of questionnaires have been conducted for example with regard to emotional functioning and attachment (e.g., Fouladi, McCarthy, & Moller, 2002). These studies demonstrate basic convergences between paper-and-pencil and online measures. In a review of studies that compared Web and lab experiments, Krantz and Dalal (2000) concluded that both methods yielded surprising agreement.

Conclusion

In an influential paper, Gosling, Vazire, Srivastava, and John (2004) asked whether we can trust web-based studies and concluded that, yes, we can. Drawing from the literature, various techniques and remedies were used in order to address concerns in web-based research. Moreover, as recommended by Birnbaum (2004) extensive pilot tests were conducted before the study was launched online.

4.2 Sample

The present study involved German university graduates from four selected fields of study. In this section, I discuss the recruitment and sociodemographic characteristics of the sample.

4.2.1 Sample Recruitment

University graduates from four selected fields of study were recruited in order to compare graduates with favorable and unfavorable employment opportunities. Medicine and psychology were classified as fields of study with favorable employment prospects, whereas architecture and the humanities were categorized as fields with unfavorable prospects based on labor market statistics and graduate surveys (Briedis & Minks, 2004; Institut für medizinische und pharmazeutische Prüfungsfragen (IMPP), 2006; Statistisches Bundesamt, 2005; Zentralstelle für Arbeitsvermittlung der Bundesagentur für Arbeit (ZA), 2004). Whereas the first three fields of study represent distinct disciplines, the humanities are a cluster of different academic disciplines. Following the HIS graduate panel (Briedis & Minks, 2004), these disciplines were grouped into one category when participants had received a Magister degree. For reasons of sample homogeneity, the recruitment targeted graduates without prior job experience for whom the transition after university was the first transition into work life. Participation in the study was voluntary.

Participants across Germany were recruited starting in fall 2004 and ending in 2006 – thus, involving two graduating cohorts – using various approaches. Letters were sent to prospective graduates through registration offices at different universities in East and West Germany in the federal states of Saxony, Thuringia, and Baden-Württemberg. Depending on university regulations, approvals were obtained from the university chancellors, department heads, the department management, registration offices, and privacy protection offices. Participants were also recruited online. Announcements were set up in electronic newsgroups and mailing lists of university students and graduates (“targeted advertising”, Nosek et al., 2002) with a link to the study website. A press release was launched, which contained a link to the study website. Finally, participants were encouraged to inform their friends of the study (Nosek et al., 2002), reminiscent of snowball sampling (cf. Henry, 1990).

At the website, prospective participants received information on the study including a section with frequently asked questions (FAQ). The aim of the study was to investigate “Views, Satisfaction, and Directions after Graduation” (*Ansichten, Zufriedenheit und*

Richtungen nach dem Studium – AZUR). Participants were informed that they would receive several online questionnaires and that they could also receive questionnaires via postal mail. They were ensured that all data would be treated confidentially and anonymously. Participants registered for the study, provided their contact information, and received a confidential password by email, which gave them access to the online questionnaire. It took about 20 to 30 minutes to complete the questionnaire. Every six months, participants could win gift certificates worth 50€ or 100€ for books, CDs, DVDs, and other products from a major electronic commerce company. Overall, the total amount of gift certificates to be won over the course of the study was 1700€.

4.2.2 Sociodemographic Characteristics

A total of 787 individuals answered the first questionnaire. Individuals were selected for the longitudinal follow-up if they had graduated in one of the four target fields of study (medicine, psychology, architecture, humanities) and if they had graduated between January 2004 and January 2006. This resulted in a final sample size of 523. Most participants had graduated in 2004 ($n = 262$; 50.1%) or 2005 ($n = 255$, 48.8%). Six participants (1.1%) had graduated in 2006.

Socio-demographic characteristics of the 523 sample participants broken down by field of study are displayed in Table 4.1. Three-hundred thirteen (59.8%) participants had graduated in fields with favorable employment opportunities compared to $n = 210$ (40.2%) in the unfavorable group. Specifically, 234 (44.7%) participants had graduated in medicine whereas 79 (15.1%) had graduated in psychology. Forty-four (8.4%) had graduated in architecture whereas 166 (31.7%) had graduated in the humanities. As only university graduates were recruited – not graduates from universities of applied sciences – all participants had obtained the highest academic degree in their respective specific field of study: State examination (medicine), diploma (psychology, architecture), and Magister (humanities).

In the present study, it was possible to compare characteristics of the sample with population characteristics of graduates in the different fields of study (see Table 4.1) drawing from various sources (Briedis & Minks, 2004; IMPP, 2006; Statistisches Bundesamt, 2005; ZA, 2004). Thus, hints on sample representativeness could be obtained. Statistics referring to the years 2004 and 2005 were used whenever possible as comparison data.

Table 4.1

Sociodemographic Characteristics in the Sample and Respective Population by Field of Study

Field of Study	Sample		Population
	<i>M</i>	<i>SD</i>	<i>M</i>
Favorable employment opportunities			
Medicine (<i>n</i> = 234, 44.7%)			
% females	58.1		55.2 ^b
Age (<i>M</i>)	27.34 (26.98 ^c)	1.94	27.69 ^{b,c}
GPA	2.25	.54	1.94 ^b
% unemployed ^a	1.3 ^b		2.1 ^d
Psychology (<i>n</i> = 79, 15.1%)			
% females	78.5		75.6 ^e
Age (<i>M</i>)	27.82 (26.08 ^c)	4.25	30.6 ^e
GPA	1.47	.59	1.48 ^e
% unemployed ^a	2.5 ^b		4 ^f
Unfavorable employment opportunities			
Architecture (<i>n</i> = 44, 8.4%)			
% females	56.8		51.9 ^e
Age (<i>M</i>)	27.61 (26.97 ^c)	2.58	28.9 ^e
GPA	1.74	.36	2.08 ^e
% unemployed ^a	11.4 ^b		7 ^f
Humanities (<i>n</i> = 166, 31.7%)			
% females	83.1		79.9 ^{e,g}
Age (<i>M</i>)	26.49 (25.97 ^c)	2.73	29.5 ^{e,g}
GPA	1.79	.52	1.89 ^{e,g}
% unemployed ^a	10.2 ^b		8 ^f

Note. ^a One year after graduation. ^b Source: IMPP (2006). ^c median age. ^d Source: ZA (2004). ^e Source: Statistisches Bundesamt (2005). ^f Source: Briedis & Minks (2004). ^g Example major: Education.

For the humanities, aggregate numbers for the proportion of females, age, and GPA were not available. Instead, education was chosen as reference major as this was the most common major in the humanities in the sample (*n* = 27, 16.2%).

Overall, the sample appeared reasonably unbiased with some smaller deviations. Regarding *gender*, females were slightly overrepresented. However, deviations between sample and population rates did not exceed 5 percentage points.

Regarding *age*, participants' mean age was lower than the mean age in the respective population. However, when median ages were compared, as in medicine, the difference between sample and population shrunk considerably (< 1 year). Unfortunately, population median ages were not available for the other fields of study. The considerable gap between mean and median ages in the population probably was due to older, nontraditional students in the population. The present study focused on participants without prior job experience. In

fact, only 9.9% of the participants in the sample had completed a vocational education prior to their university degree.

Concerning *GPA*, the average sample GPA closely mirrored population statistics. The smallest deviation was observed in psychology with .01 whereas the largest deviation was observed in architecture with .34. Remember that lower GPA values indicated higher achievement.

Finally, among the various indicators of work adaptation, I decided to focus on *unemployment* rates as the most clear-cut criterion (Briedis & Minks, 2004). Field-specific unemployment rates were drawn from the HIS graduate survey (Briedis & Minks, 2004), which, as the only national study contained information on graduates' unemployment rates 12 months after graduation. When the thesis was written, results for the 2004 cohort were not yet available so that I had to refer to the 2001 cohort.¹ For medicine, data from the ZA (2004) statistics were used. Overall, unemployment rates in the sample were slightly lower for fields with favorable prospects and somewhat higher for fields with unfavorable opportunities compared to the 2001 HIS graduate cohort. At this point, it is unclear whether these small deviations indicated sample selectivity or real unemployment trends.

A Closer Look at the Work Situation One Year after Graduation

As portrayed in Table 4.1, unemployment rates 12 months after graduation were similarly low in both medicine (1.3%) and psychology (2.5%) whereas unemployment rates in architecture (11.4%) and the humanities (10.2%) were about five times as high. A variety of additional work indicators was analyzed to further examine the viability of conceiving medicine and psychology as fields with favorable and architecture and the humanities as fields with unfavorable employment opportunities. Findings on the work situation of graduates in these different fields of study are depicted in Table 4.2.

Almost all graduates in medicine (93%) and psychology (95%) were in gainful employment one year after graduation whereas this was the case for only 80% of graduates in architecture and 77% in the humanities. Whereas 21% of graduates both in medicine and psychology reported that they were currently looking for a job, this number was twice as high in architecture and the humanities.

¹ For graduates in medicine, the situation was special. Since 2004, German medicine graduates no longer have to take part in an obligatory training program (“Arzt im Praktikum”) after graduation, but immediately enter the labor market. Thus, data on the employment status of earlier graduating cohorts were not available (cf. Briedis & Minks, 2004).

Table 4.2

Work Situation One Year after Graduation by Field of Study

	Favorable opportunities		Unfavorable opportunities	
	Medicine	Psychology	Architecture	Humanities
Employment	93%	95%	80%	77%
Income	2078.97 (586.41)	1172.26 (454.95)	1403.26 (758.57)	921.11 (440.67)
Looking for job	21%	21%	41%	40%
Fixed-term contract	93.6%	78.8%	34.6%	69%
Work satisfaction	3.89 (.92)	3.70 (1.15)	3.62 (1.12)	3.43 (1.16)
Work goal progress	7.72 (2.06)	7.43 (1.95)	6.96 (2.43)	6.50 (2.53)

Note. Means (standard deviations in brackets) one year after graduation.

Regarding income, the rank order was a bit different (medicine > architecture > psychology > humanities) as apparently those architects that were employed on average earned considerably more than the psychologists. Importantly, most individuals in *all* fields who were currently employed had fixed-term contracts, again, with the exception of the architects. Note, however, that the total number of architects in the sample was very small ($n = 44$). In the whole sample, the vast majority (79.1%) of those who were currently employed had fixed-term contracts, regardless of field of study. Importantly, in the present study, only ten individuals were doing an internship one year after graduation.

Moreover, graduates in medicine reported the highest levels of work satisfaction and work-related goal progress followed by psychology graduates. Lower levels were reported by architecture graduates and graduates from the humanities. On average, individuals were partly to rather satisfied with their work situation.

In sum, particularly unemployment rates, employment status, and job search status – prime criteria for the present categorization – in the different fields of study supported the viability of conceiving medicine and psychology as fields with favorable employment opportunities and architecture and humanities as fields with unfavorable opportunities.

4.3 Measures

In the study, motivational orientations, work-related goal engagement and goal disengagement, well-being, work adaptation, and additional aspects were assessed. All constructs were measured using self-report. The full scales can be found in Appendix A. In this section, brief descriptions of the central measures are presented whereas measurement properties and findings from reliability and validity analyses are given in the next chapter. The section closes with a short summary. Table 4.3 provides an overview of all study measures, which are now introduced in detail.

4.3.1 Life Goals and Self-Concordance of Work Goals

Learning and Status Goals

The study focused on two major life goals: Learning and status goals. These were measured by items from the GOALS questionnaire (Pöhlmann & Brunstein, 1997), which has demonstrated adequate measurement properties and cultural invariance in previous studies (Hofer & Chasiotis, 2003). Participants rated how important it was for them to realize certain goals in their life (1 = not at all important; 5 = very important). Learning goals (i.e., “broaden my horizon”; “further my competencies”) and status goals (i.e., “have prestigious positions”; “have a high social status”) were measured by two items each. Learning goals as defined here were drawn from the achievement scale, and status goals as defined here were drawn from the power scale. Although designed in the context of Bakan’s (1966) theory, the GOALS questionnaire has been used as a measure of intrinsic and extrinsic life goals. Klusmann, Trautwein, and Lüdtke (2005) showed that intrinsic and extrinsic life goals assessed by the GOALS questionnaire converge with intrinsic and extrinsic life goals measured by the Aspirations Index (Kasser & Ryan, 1996).

Table 4.3

Measures

Construct	Measure
Motivational orientations	
Learning goals	GOALS; Pöhlmann & Brunstein, 1997
Status goals	GOALS; Pöhlmann & Brunstein, 1997
Work goal self-concordance	Sheldon et al., 2004
Work OPS	
Work goal engagement	OPS; Heckhausen et al., 1998
Work goal disengagement	OPS; Heckhausen et al., 1998
Well-being	
Life satisfaction	SWLS; Diener et al., 1985
Positive affect	Negative items, CES-D 10; Andresen et al., 1994
Negative affect	Positive items, CES-D 10; Andresen et al., 1994
Purpose in life	PWB; Ryff, 1989
Autonomy	PWB; Ryff, 1989
Positive relations	PWB; Ryff, 1989
Work adaptation	
Work satisfaction	Wanous et al., 1997
Work goal progress	Little, 1983
Employment	Statistisches Bundesamt, 2004
Income	Statistisches Bundesamt, 2004

Self-Concordance of Work Goals

In order to measure self-concordance of work goals, the global goal self-concordance measure (Sheldon & Elliot, 1999; Sheldon et al., 2004) was adapted to the work domain (cf. Judge et al., 2005). Participants freely nominated their most important work goal and indicated reasons why they pursued this goal (1 = strongly disagree; 5 = strongly agree). The two controlled reasons were “because somebody else wants me to or because the situation seems to compel it” (external motivation) and “because I would feel ashamed, guilty, or anxious if I did not have this goal” (introjected motivation). The two autonomous reasons were “because I really identify with it” (identified motivation) and “because of the enjoyment or stimulation that this goal would provide me” (intrinsic motivation). One item was added to measure autonomous motivation drawing from Little (1983): “To what extent is this goal consistent with the values which guide your life?” (1 = not consistent at all; 10 = completely consistent). Adding this re-scaled item to the scale improved internal consistency. Following Sheldon et al. (2004) the goal self-concordance measure was computed by subtracting the sum of the two controlled reasons from the sum of the three autonomous reasons.

4.3.2 Work-Related OPS

Work-related goal engagement and goal disengagement were measured by the Optimization in Primary and Secondary Control (OPS) scale, which was tailored to the work domain. The work-related OPS scale has demonstrated adequate measurement properties and validity in previous studies (Heckhausen & Tomasik, 2002; Poulin & Heckhausen, in press) as did the global OPS scales (Heckhausen, Schulz, & Wrosch, 1998). Five-point scales were used with answers ranging from strongly disagree (1) to strongly agree (5). Importantly, all items were formulated at a broad level so that individuals could identify various actions (cf. Vallacher & Wegner, 1987) as goal engagement and goal disengagement, whether they were looking for a job or already had one.

Work-Related Goal Engagement

This construct was measured by a 23-item composite scale of selective primary control striving, selective secondary control striving, and compensatory control striving. Selective primary control striving (SPC) refers to the investment of behavioral resources such as time and effort during goal engagement and was measured by five items (e.g., “I work hard to have a good occupational future”). Selective secondary control striving (SSC) captures meta-volitional strategies during goal engagement, for example in order to enhance perceived control over goal attainment and was measured by four items (e.g., “When I think about my occupational future I often tell myself that I will surely be successful”). Compensatory primary control striving (CPC) refers to the activation of social support, external help, and unusual means during goal engagement and was assessed by four items (e.g., “If my occupational future is in danger, I will seek help (e.g., from acquaintances, friends, parents)”).

Work-Related Goal Disengagement

Work-related goal disengagement was measured by four items reflecting components of compensatory secondary control striving (CSC) including self-protective attributions (e.g., “If I cannot attain my desired career, I will tell myself that it is not my fault”) and goal disengagement (“If I cannot realize my occupational plans, I will simply settle for the next best job”). More recent approaches disentangle the two different facets of compensatory secondary control striving, self-protection and goal disengagement using a more differentiated CSC scale (e.g., Silbereisen, Pinquart, Reitzle, Tomasik, Fabel, & Grümer, 2006). However, this scale was not yet available when the present study was conducted.

4.3.3 Well-Being

Life Satisfaction

Satisfaction with life was measured by the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985; German translation by Schumacher, 2003). This five-item instrument assesses global cognitive evaluations of one's own life (e.g., "I am satisfied with my life") with answers ranging from 1 (strongly disagree) to 7 (strongly agree).

Positive and Negative Affect

Affect was measured using the 10-item version of the Center for Epidemiological Studies Short Depression Scale (CES-D 10; Andresen, Malmgren, Carter, & Patrick, 1994; German translation by Hautzinger & Bailer, 1993). Traditionally, the scale has been used to measure depressive symptoms or *negative affect* (e.g., "I felt depressed"). However, two items do in fact measure *positive affect* (e.g., "I was happy") and were hence taken as indicators of positive affect following Watson et al. (1988). The CES-D 10 assesses affective states experienced during the last week with answers ranging from 1 (rarely, less than one day) to 4 (all of the time, 5 -7 days).

Psychological Well-Being

Three aspects of psychological well-being were measured using the Psychological Well-Being scales (PWB; Ryff, 1989; Ryff & Keyes, 1995; German translation by Staudinger, Fleeson, & P. B. Baltes, 1999) referring to purpose in life, autonomy, and positive relations. In the present study, each aspect was measured by a 9-item scale as in the Wisconsin Longitudinal Study (Ryff, 2004) with answers ranging from 1 (strongly disagree) to 6 (strongly agree).

Purpose in life was assessed by 9 items, for example "Some people wander aimlessly through life, but I am not one of them". According to Ryff & Keyes (1995), a high scorer "has goals in life and a sense of directedness; feels there is meaning to present and past life; holds beliefs that give life purpose; has aims and objectives for living".

Autonomy was measured by 9 items, such as "I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people". A high scorer "is self-determining and independent; able to resist social pressures to think and act in certain ways; regulates behavior from within; evaluates self by personal standards" (Ryff & Keyes, 1995).

Positive relations with others were assessed by 9 items for example "I know that I can trust my friends, and they know they can trust me". A high scorer "has warm satisfying, trusting

relationships with others; is concerned about the welfare of others; capable of strong empathy, affection, and intimacy; understands give and take of human relationships” (Ryff & Keyes, 1995).

4.3.4 Work Adaptation

Work Satisfaction

Satisfaction with one’s work situation was measured using one item (“How satisfied are you with your current work situation?”) with answers ranging from 1 (very dissatisfied) to 5 (very satisfied). Single-item measures of job satisfaction are reliable and valid (Wanous, Reichers, & Hudy, 1997).

Work-Related Goal Progress

Perceived progress regarding one’s most important work goal was measured using one item (“To what extent have you been successful so far pursuing this goal?”). Answers ranged from (0) not successful at all to (10) completely successful. Drawing from Little (1983) a single-item measure was used.

Employment Status

Participants indicated whether they were (1) currently gainfully employed or (0) not. Drawing from the demographical standard item (Statistisches Bundesamt, 2004) gainful employment was described as “any job that pays a salary including stipends, payed internships etc”. Employment status was not assessed at wave 1 as participants – by study design – were about to graduate.

Income

Participants reported on their own monthly income after taxes in Euro. In standardized surveys (Statistisches Bundesamt, 2004), income is usually assessed using broad categories to minimize non-response. In order to detect even small income changes, participants were asked to freely nominate their exact income in the present study. At wave 1, income was assessed as monthly income per household and was changed to own monthly income at wave 2. In order to not confuse household income and own income, I decided to not include income data from wave 1.

4.3.5 Sociodemographic Characteristics

I included employment opportunities, gender, age, GPA, unemployment, partnership status, children, and parental education as sociodemographic characteristics in the study. *Unfavorable employment opportunities* were coded as (0) when participants had graduated in medicine or psychology and as (1) when they had graduated in architecture or the humanities. *Gender* was coded as (1) male and (2) female. *Age* was measured at age at graduation. Participants indicated their month and year of birth and graduation; and a continuous age variable (years) was construed. *GPA* at graduation was assessed with one decimal place following Schneller and Schneider (2005) with a potential range from (1.0) excellent to (4.0) poor. *Unemployment* was assessed by asking participants whether they were currently registered unemployed (1) or not (2). *Partnership status* was measured irrespective of legal status as (1) when participants had a partner and as (2) when they were single. Whether participants had children was measured by a dichotomous variable as (1) no and (2) yes. *Mothers' and fathers' education* was measured by a standard item (Statistisches Bundesamt, 2004) as (1) not graduated, (2) lower school tier, (3) middle school tier (4) higher school tier (*Fachhochschulreife*), (5) higher school tier with university entrance certificate, or (6) else.

4.4 Design

The study used a four-wave longitudinal design. In the following section, more information on the design and retention rates is provided.

4.4.1 Longitudinal Study Design

The study used a four-wave longitudinal design (see Figure 4.1). Data were collected at graduation (wave 1), four months (wave 2), eight months (wave 3), and twelve months (wave 4) after graduation. A minority of participants ($n = 88$, 16.8%) had not yet graduated when they registered for the study and received an additional questionnaire prior to graduation. Some of these participants postponed their graduation date during the course of the study. In order to detect such cases every participant indicated her or his graduation date at each wave. When participants postponed their graduation date, they were re-categorized into the pre-graduation group. Pre-graduation data were not used in the present analyses.

As graduation dates vary widely in Germany, data collection followed an individualized schedule for each participant depending on his or her graduation date. When participants were eligible for data collection they received an e-mail invitation at the beginning of the month. Two reminders were sent about two and three weeks later. Initially, study participants were contacted via telephone when they had not reacted to the second reminder. However, this method was too time-consuming and was not pursued further. When participants had completed the online questionnaire, they received an electronic thank you mail.

As the date of data collection was automatically assessed when participants answered the online questionnaire, it was possible to check how closely the participants followed the schedule of data collection.

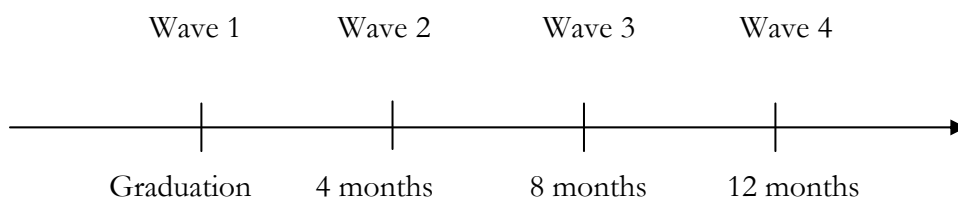


Figure 4.1. Longitudinal study design

Participants answered the wave 1 questionnaire on average $M = .82$ months after graduation ($SD = 1.02$). The wave 2 questionnaire was answered $M = 4.40$ months after graduation ($SD = .54$). The wave 3 questionnaire was answered $M = 8.35$ months after graduation ($SD = .45$). The wave 4 questionnaire was answered $M = 12.42$ months after graduation ($SD = .64$). Thus, individuals appeared to closely follow the schedule of data collection.

4.4.2 Retention

Missing data can be a serious problem for the interpretation and generalization of the findings of a study (for a detailed discussion see Little & Rubin, 1987). In longitudinal studies, particularly drop-out across time is a concern. As discussed above, various techniques were used in order to secure retention including the high-hurdle technique, thank you emails, reminders, information letters, and incentives (cf. Birnbaum, 2004). Thus, did these efforts result in a satisfactory retention rate?

Following Little, Lindenberger, and Maier (2000) participation depth was analyzed as an indicator of retention in order to take into account that some participants may be absent for one follow-up wave, but may re-join the study at a later wave. Forty-five percent ($n = 234$) of participants took part in all four waves of data collection. One-hundred and twenty eight graduates (24.5%) participated in three waves and 105 graduates (20.1%) participated in two waves. Fifty-six graduates (10.7%) participated in only one wave. Thus, 69.2% participated in at least three out of four waves of data collection.

As participants were allowed to register for the study at any time some data were missing by design as not all participants were recruited into the study at wave 1. Thus, some participants entered the study later, at wave 2 ($n = 71$, 13.6%), wave 3 ($n = 36$, 6.9%), or wave 4 ($n = 13$, 2.5%). An additional analysis of participation depth including only participants who had entered the study at wave 1 ($n = 403$, 77.1%) showed that, again, the majority of these participants ($n = 234$, 58.1%) had participated in all waves of data collection. Seventy-eight (19.4%) took part in three waves and 59 (14.6%) participated in two waves. Thirty-two (7.9%) completed only one wave. Thus, among those eligible for all four waves, 77.4% took part in at least three waves of data collection.

Finally, I analyzed whether sociodemographic characteristics predicted participation depth, including gender, age, GPA, unemployment status, mother's education, father's education, partnership status, and own children as predictors in a linear regression model. This analysis revealed that participation depth was not selective with regard to these variables.

4.5 Semi-Structured Interviews

Semi-structured interviews were conducted with 15 participants at wave 4, one year after graduation. The aim of these interviews was to gather qualitative data as narrative illustrations for the discussion of this thesis. My aim was not to conduct a qualitative content analysis (Mayring, 2000).

From the longitudinal sample, 22 participants from all four fields of study were randomly selected for the interview. Five participants did not reply to the interview request and two interviews were not recorded due to a technical error resulting in a final number of 15 interviews (medicine: $n = 2$; psychology: $n = 6$; architecture: $n = 3$; humanities: $n = 4$). Participants did not receive additional compensation for the interview.

The interviews were conducted using the Computer Assisted Telephone Interviewing (CATI) facilities at the Collaborative Research Consortium SFB 580 at the University of Jena (Ritter, 2006). Due to personnel constraints, I conducted all interviews myself being aware of potential interviewer effects.

At the beginning of the interview, I introduced myself, thanked the interviewees for their participation in the study, introduced the topics of the 30-minutes interview, and stressed the confidentiality and anonymity of the interview. Participants were ensured that all names and references would be anonymized and were reminded that they could quit the interview at any time. Participants provided their consent for the recording of the interview. The following aspects were covered: Work situation, work goals, partnership/family situation, partnership/family goals, other life domains, well-being, and social comparisons. The contents of the semi-structured interview are presented in Appendix B. Supplementary questions were added to clarify and expand on the aspects raised. Occasionally, prompts and suggestions were made. Interviewees were usually addressed using the formal German “Sie” except when they wished to use the informal “Du”. Research assistants transcribed and coded all interviews using Atlas.ti 5.0 (Muhr, 2004). Abbreviations and pseudonyms were used whenever necessary to ensure complete anonymity and confidentiality. I selected quotations for the discussion of this thesis to illustrate my interpretations and provide insights into points of convergence between the quantitative findings from the longitudinal study and these qualitative findings.

4.6 Summary

In this chapter, the method of the study was presented. As the study was conducted online considerations in web-based research were discussed including ethical, security-related, sampling, and measurement considerations and how they were addressed in the present study. The sample involved two cohorts (2004/2005) of 523 German university graduates from four fields of study with favorable (i.e., medicine, psychology) vs. unfavorable (i.e., architecture, humanities) employment opportunities. Sociodemographic characteristics of the study participants were compared to population statistics in the respective field of study. Despite some deviations, the sample appeared reasonably unbiased regarding central sociodemographic characteristics. Information on the work situation of graduates in the four fields of study was presented, which supported the categorization into fields of study with favorable vs. unfavorable employment opportunities. All measures used in this study were established self-report measures. Findings from the measurement analyses are not presented here, but in the next chapter. The study used a 4-wave longitudinal design. Data were collected at graduation and four months, eight months, and twelve months after graduation. The study had a satisfying retention rate. About 70% of graduates participated in at least three out of four waves of data collection. Participation depth was not selective. Semi-structured interviews were conducted with 15 randomly selected participants one year after graduation. The aim of these interviews was to provide illustrations for the discussion of this thesis. All data including the longitudinal data set and the transcripts of the interviews can be obtained from me.

5 Results

This chapter presents the findings of the study. First, some basic ideas behind latent growth curve modeling (LGM) are introduced, the statistical approach used for longitudinal data analysis. Then, a variety of preliminary analyses are presented. In the remaining sections, findings for all hypotheses are shown, each section focusing on one hypothesis. Each of these sections closes with a short summary.

5.1 Latent Growth Curve Modeling at a Glance

Longitudinal data can be analyzed using various statistical methods. I chose latent growth curve modeling (LGM), which holds a number of advantages over traditional wave-to-wave regressions and is well-suited to study interindividual differences in intraindividual change (e.g., Hox, 2000; McArdle & Epstein, 1987; Singer & Willett, 2003). Besides LGM, another approach to growth modeling is multilevel modeling. LGM was chosen because it allows for an overall evaluation of model fit by providing fit indexes and because it provides more flexibility for modeling and hypothesis testing (Chou, Bentler, & Pentz, 1998). Moreover, in LGM the growth variable – the slope – can be included as a predictor in a model, which is not possible in multilevel modeling (Hox, 2000). Finally, the two approaches appear to yield “very compatible results” (Chou et al., 1998, p. 245).

Basic LGM Terminology

In LGM, individual change trajectories are projected onto two latent variables: the *intercept* and the *slope*. Such a model is referred to as a *univariate LGM* in the following. In the present analyses, the intercept variable indicated the baseline at which individuals started at graduation. The slope variable signified their rate of change across time. For example, the intercept of work-related goal engagement indicated the level of engagement at graduation. As not all individuals probably started at a similar level, a significant intercept variance was expected. Furthermore, across time, individuals supposedly changed their work-related goal engagement. Maybe individuals on average increased their goal engagement, which would result in a positive slope mean. On the other hand, some individuals maybe increased their goal engagement whereas others decreased it or kept it stable. These interindividual differences in intraindividual change would be indicated by a significant slope variance. Hypothesis 1 predicted such interindividual differences for all constructs under investigation.

All other hypotheses focused on the prediction of interindividual differences in intraindividual change using *bivariate LGM*. Figure 5.1 shows a bivariate LGM between two example variables, A and B. Bivariate LGM have also been referred to as “cross-domain models” (Sayer & Willett, 1998).

In some hypotheses, I formulated predictions regarding moderator effects of employment opportunities. These moderator effects were tested using a *multi-group* approach. One group of graduates with favorable opportunities was compared to a second group with unfavorable opportunities. The technical details of these analyses are presented later.

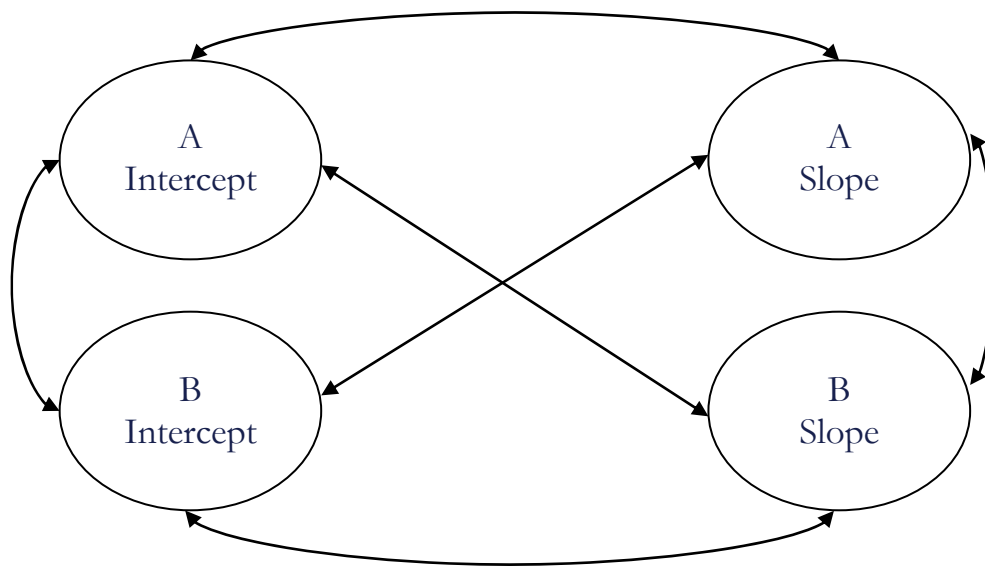


Figure 5.1. Bivariate latent growth curve model (LGM)

Predicting Change

The present hypotheses focused on how one variable A (e.g., learning goals) predicted another variable B (e.g., work-related goal engagement). Various associations in the LGM were examined. First, associations between the intercepts were studied. For example, did learning goals at graduation relate to work-related engagement at graduation? These intercept relations, however, did not reveal anything about the predictors of longitudinal change in B. Thus, I was most interested in what predicted the slope of B. One possible predictor was the intercept of A. For example, did learning goals at graduation predict changes in work-related goal engagement? The other possible predictor was the slope of A. For example, did changes in learning goals predict changes in work-related goal engagement?

One could think that intercept-slope associations provide stronger evidence for direct effects than slope-slope associations, but this perspective is not adopted here. I do not deem intercept-slope relations more (or less) informative than slope-slope relations due to the following reasons. First, based on correlational data causal interpretations are not possible, neither drawing from intercept-slope nor from slope-slope associations. Second, in LGM, the intercept needs to be fixed to a certain point in time – graduation in this case –, which, however, does not necessarily mark the beginning of the (ongoing) processes under study. Intercept-slope relations hence inevitably are affected by the study design and, in addition, by the scaling of the time metric (Singer & Willett, 2003). Finally, it is well possible that associations between the slopes of A and B are driven by changes in B rather than by changes

in A, or that their correlated change is caused by an unknown third variable. While I cannot rule out third-variable interpretations, I explicitly considered reverse effects in the present thesis studying associations between the intercept of B and the slope of A. As will be seen later, most reverse effects that I found were, in fact, negative feedback loops and did not challenge my interpretations of slope-slope associations. In sum, I posit that the interpretation of both intercept-slope as well as slope-slope relations needs to be guided by theory, with a consideration of alternative interpretations. Data itself do not “speak” in favor of one or the other interpretation.

Missing Data, Significance Tests, and Model Fit

Three final aspects merit consideration: Missing data treatment, significance tests, and model fit. First, all analyses involving structural equation modeling were conducted using the program AMOS (Arbuckle, 2003). AMOS uses a Full Information Maximum Likelihood (FIML) algorithm to estimate missing values. Second, I conservatively applied two-tailed significance tests throughout my analyses in view of the controversy surrounding one-tailed tests (e.g., Leventhal, 1999). Third, regarding model fit, I report χ^2 values as indicators of absolute fit in the following. However, as this index is very sensitive to sample size I further refer to relative fit indexes, specifically to the comparative fit index (CFI, Bentler, 1990) and the root mean square error of approximation (RMSEA, Browne & Cudeck, 1993), which are commonly reported in LGM. Considerable debate centers around the cutoff values for these indexes. Whereas some recommend a RMSEA cutoff value of .06 (Hu & Bentler, 1999), others have criticized this cutoff as too conservative (Marsh, Kit-Tai & Zhonglin, 2004). In the present thesis, I followed Browne and Cudeck (1993) who suggest RMSEA values of less than .05 as indicators of close fit and values between .08 and .05 as indicators of acceptable fit. For the CFI, a cutoff of .90 was chosen.

5.2 Preliminary Analyses

In the following section, preliminary analyses are presented. First, information on reliability and measurement invariance is provided. Second, a brief overview of the discriminant validity of the measures is given. Third, concurrent intercorrelations between the central constructs are presented. The section closes with a summary.

5.2.1 Internal Consistencies and Measurement Invariance

Measurement invariance is an important precondition in LGM (e.g., Chan & Schmitt, 2000). In order to conduct meaningful analyses of change in a certain construct across time it is important that this construct is measured in a similar way and with similar precision at each wave. Measurement invariance was examined using confirmatory factor analysis by means of structural equation modeling (Raju, Laffitte, & Byrne, 2002). I focused on two aspects of measurement invariance, configural and factorial invariance across time.

Internal Consistencies

Prior to these analyses the internal consistencies were analyzed. Table 5.1 provides an overview of the results. Internal consistencies were satisfactory to high for all constructs except for work-related goal disengagement, which showed low consistency ($\alpha < .60$) at two waves.

Configural Invariance

Configural invariance ensures that the proposed factor structure of each measurement model holds up at each wave. Thus, single-factor models were expected to show satisfactory fit at each wave, and multiple-factor models were expected to split up into the same set of factors at each wave.

In the present analyses, self-concordance of work goals and satisfaction with life were specified as single-factor models with one latent variable. A two-factor model was proposed for the GOALS questionnaire with learning and status goals as latent variables. Work-related OPS was specified as a two-factor model with goal engagement and goal disengagement as latent variables. Likewise, a two-factor model was specified for positive and negative affect. Finally, for psychological well-being a three-factor model was tested, which comprised purpose in life, autonomy, and positive relations.

Table 5.1
Internal Consistencies and Configural Invariance

	Wave	<i>a</i>	Model Fit				
			χ^2	df	CFI	RM SEA	
Motivational orientations							
Life goals ^a	1	.69 (LEA) .80 (STA)	10.91*	3	.98	.071	
	2	.72 (LEA) .81 (STA)	2.86	3	1.00	.000	
	3	.70 (LEA) .83 (STA)	5.06	3	.99	.036	
	4	.66 (LEA) .83 (STA)	.83	3	1.00	.000	
Work goal self-concordance ^b	1	.62	13.58**	2	.96	.105	
	2	.63	3.68	2	.99	.040	
	3	.74	6.95*	2	.99	.069	
	4	.65	2.70	2	.99	.026	
Work OPS ^c							
	1	.85 (WENG) .52 (WDIS)	256.05***	95	.92	.057	
	2	.85 (WENG) .57 (WDIS)	336.03***	95	.89	.070	
	3	.86 (WENG) .61 (WDIS)	293.22***	95	.91	.063	
	4	.85 (WENG) .61 (WDIS)	313.08***	95	.90	.066	
Well-being							
Satisfaction with life ^d	1	.87	5.61	4	.99	.028	
	2	.87	7.80	4	.99	.043	
	3	.85	5.75	4	.99	.029	
	4	.86	1.51	4	1.00	.000	
Positive and negative affect	1	.85 (PA) .72 (NA)	119.34***	34	.94	.069	
	2	.83 (PA) .75 (NA)	70.94***	34	.97	.046	
	3	.80 (PA) .67 (NA)	91.68***	34	.95	.057	
	4	.80 (PA) .71 (NA)	113.06***	34	.92	.067	
Psychological well-being	1	.81 (PUR) .78 (AUT) .82 (REL)	33.90	24	.99	.028	
		2	.72 (PUR) .75 (AUT) .87 (REL)	75.01***	24	.95	.064
			3	.78 (PUR) .83 (AUT) .84 (REL)	51.28**	24	.98
	4			.81 (PUR) .79 (AUT)	52.66**	24	.98
		.84 (REL)					

Note. LEA = Learning goals. STA = Status goals. WENG = Work-related goal engagement. WDIS = Work-related goal disengagement. PA = Positive affect. NA = Negative affect. PUR = Purpose in life. AUT = Autonomy. REL = Positive relations. ^a Fixed error variances: $\text{Var}(\epsilon_2)$; $\text{Var}(\epsilon_4)$. ^b Free error covariances: $\text{Cov}(\epsilon_1, \epsilon_2)$; $\text{Cov}(\epsilon_1, \epsilon_4)$; $\text{Cov}(\epsilon_3, \epsilon_5)$. ^c Free error covariances among SPC, SSC, CPC and CSC self-protection items. ^d Free error covariances: $\text{Cov}(\epsilon_4, \epsilon_5)$.

* $p < .05$ ** $p < .01$ *** $p < .001$

For the latter measurement model, the items were parcelled in order to avoid model misspecification. Three parcels were obtained per construct. In classical test theory, errors of latent variables are assumed to be independent, but this assumption does not always hold (e.g., Byrne & Watkins, 2003). Thus, some error covariances were not constrained as indicated in Table 5.1. Specifically, three error covariances were freed in the model for goal self-concordance, acknowledging that different forms of controlled vs. autonomous motivation were supposed to underlie each item (cf. Sheldon et al., 2004). The error terms within each of the OPS subscales – SPC, SSC, CPC, and CSC – were allowed to covary as these four control strategies are conceptualized as distinct factors serving goal engagement and goal disengagement, respectively (Heckhausen, 1999). In addition, one error covariance was relaxed in the model for life satisfaction. Moreover, for reasons of model identification, the error variances of the first item measuring learning and status goals, respectively, were constrained to zero.

As shown in Table 5.1 most measurement models exhibited acceptable fit according to the cutoff values introduced earlier. Some models even yielded absolute fit. RMSEA was unsatisfactory only for one model, the model for goal self-concordance at wave 1. As model fit was satisfactory at all following waves, I decided to accept this shortcoming. These analyses showed that most measurement models exhibited satisfactory fit at each wave of measurement, thus, supporting configural invariance.

Factorial Invariance

I proceeded to investigate factorial invariance across time, again, using confirmatory factor analysis. Factorial invariance provides evidence that the latent variables have the same meaning across time. Specifically, an unconstrained model with free factor loadings was compared to a model where the factor loadings of the items were constrained to be equal across time. Factorial invariance holds when the unconstrained model does not fit the data significantly better than the constrained model. In order to avoid model misspecifications every construct was examined separately.

Table 5.2

Factorial Invariance across Time

Model Fit	$\Delta\chi^2$	Δdf
Motivational orientations		
Learning goals	3.34	3
Status goals	.27	3
Work goal self-concordance	17.09	12
Work OPS		
Work goal engagement	3.06	6
Work goal disengagement	5.83	9
Well-being		
Satisfaction with life	15.02	12
Negative affect	9.74	6
Positive affect	.61	3
Purpose in life	24.20	24
Autonomy	20.48	24
Positive relations	40.07*	24

Note. Comparison of model with constrained factor loadings across time against unconstrained model

* $p < .05$

The items measuring goal engagement were parceled into three sets indicating the respective facets of goal engagement, SPC, SSC, and CPC. Likewise, three parcels were used for negative affect.

As can be seen in Table 5.2, no significant differences emerged between the constrained and the unconstrained models except for positive relations. Thus, factorial invariance across time was established for almost all constructs. Regarding positive relations, measurement invariance appeared not to be seriously threatened as the explained variance was very high for all items across all waves ($R^2 \geq .85$) and no systematic bias emerged. I decided to further include the construct in the analyses.

5.2.2 Discriminant Validity

All measures used were established self-report measures. However, relations between these constructs of central interest and other constructs were analyzed in order to obtain hints on discriminant validity (cf. Campbell & Fiske, 1959). The aim was to provide evidence that the different constructs – for which differential predictions had been formulated – indeed reflected different aspects of functioning. Validity questions were not the focus of this thesis and are summarized here in due brevity. Detailed information is presented in Appendix C.

Motivational Orientations

Learning and status goals. Learning and status goals showed differential relations to other life goals from the GOALS questionnaire (Pöhlmann & Brunstein, 1997), a finding which supported their discriminant validity. As shown in Appendix C, learning goals showed positive relations to altruism, intimacy, and diversity (cf. Klusmann et al., 2005). Status goals were not associated with altruism and intimacy, but a small positive correlation was found with diversity goals. This can be explained drawing from Pöhlmann and Brunstein (1997) who conceptualized learning, status, and diversity all as agency goals.

Self-concordance of work goals. In order to examine whether goal self-concordance essentially reflected high perceived control or high social support in the work domain, I sought to establish discriminant validity. Goal self-concordance showed small to medium correlations with both these aspects.

Work-Related OPS

I aimed to establish the discriminant validity of work-related goal engagement and goal disengagement. Prior to these analyses the importance of work goals was analyzed. On a 5-point scale, mean ratings ranged between 4.38 and 4.49. Put differently, at all waves, about 90% of participants rated work goals as somewhat or very important. This supported the centrality of work goals.

First, associations between goal (dis-) engagement and behavioral intentions in the work domain were studied. That is, what were graduates ready to do in order to improve their work situation? Participants with higher goal engagement were more likely to report proactive intentions in order to improve their work situation. In contrast, goal disengagement was linked to intentions to switch to other occupational fields or to downgrade occupational aspirations.

Second, I examined associations between work-related goal (dis-) engagement and goal adjustment, which reflects a global personality disposition and consists of two components, goal disengagement and goal reengagement (Wrosch et al., 2003). Again, a differential pattern of associations emerged. Work-related goal engagement was negatively related to global goal disengagement and positively to global goal reengagement. In contrast, work-related goal disengagement was positively associated with both facets of global goal adjustment.

Well-Being

Finally, correlations between the central well-being measures and other indicators of well-being were analyzed. Specifically, I focused on self-esteem (Robins, Hendin, & Trzesniewski,

2001), general self-efficacy (Schwarzer, 2007), and positive and negative affect regarding the transition after university. As expected, all well-being measures of central interest – satisfaction with life, positive and negative affect, purpose in life, autonomy, positive relations – showed considerable but not overly high associations with the other well-being indicators, which supported discriminant validity.

5.2.3 Intercorrelations

In the final set of preliminary analyses the concurrent intercorrelations of all central variables and their relations to age, gender, and field of study were examined. In addition, means, skewness, and kurtosis were analyzed. These analyses served as a preparation for the longitudinal analyses. The full Tables are provided in Appendix C and show means, standard deviations, and concurrent intercorrelations at all four waves.

Regarding means, I would like to highlight two findings. The mean of learning goals in the sample was high and higher than the mean of status goals. Likewise, the mean of self-concordance of work goals was positive, indicating that autonomous motivation was relatively stronger than controlled motivation.

Regarding intercorrelations, I focused on three aspects: (1) intercorrelations of motivational orientations, work-related OPS, well-being, and work adaptation, (2) the relations between the two criteria of developmental adaptation, work adaptation and well-being, and (3) relations with sociodemographic characteristics. All other associations are analyzed in detail later, drawing from longitudinal data and applying LGM.

First, the intercorrelations of motivational orientations, work-related OPS, work adaptation, and well-being were examined. Effect sizes were deemed small ($r = .10$), medium ($r = .30$), and high ($r = .50$) following Cohen (1992). Regarding *motivational orientations*, learning and status goals showed small or nonsignificant intercorrelations, which supported their conceptualization as distinct goal dimensions. Learning goals were positively related to the self-concordance of work goals. Regarding *work-related OPS*, a small negative correlation between goal engagement and goal disengagement was found. This lent further support to their conceptualization as distinct regulation processes. Considerable but not overly high intercorrelations were found between all aspects of *well-being* – satisfaction with life, positive affect, negative affect, purpose in life, autonomy, and positive relations, which supported the discriminant validity of subjective and psychological well-being. It is interesting to consider the relation between the various indicators of *work adaptation*, specifically, between the two subjective – work satisfaction and goal progress – and the two objective indicators –

employment and income. The two subjective indicators showed considerable intercorrelations ($.51 \leq r \leq .68$). Their correlations with two the objective indicators were somewhat smaller ($.32 \leq r \leq .48$). These findings supported the discriminant validity of the different indicators of work adaptation and illustrated the divergence of subjective and objective indicators.

Second, I examined how well-being and work adaptation related to each other. In most cases, small to medium correlations emerged, which indicated that both aspects of adaptation were related but distinct from each other. Importantly, subjective indicators of work adaptation like work satisfaction and work-related goal progress were more strongly related to well-being than objective indicators such as employment status and income. Studying correlations between aspects of well-being and income, the highest correlation was found with life satisfaction ($.24 \leq r \leq .34$). In contrast, positive and negative affect showed lower correlations with income (at wave 3 and 4: $r < |.20|$). Income showed very small or nonsignificant associations with autonomy and positive relations.

Third, I analyzed correlations with age, gender, and field of study. Overall, the correlations were rather small. Regarding *age*, few significant associations emerged. They were very small and did not appear consistently across time. Some correlations were found with *gender*. Women were slightly younger than men. Military (or civil) service is mandatory for males in Germany and most males hence enter university one year later than females. Furthermore, women reported higher learning goals at wave 1 and 4 as well as consistently higher goal engagement and goal disengagement. Women reported lower autonomy, higher positive relations, and higher negative affect. The latter association, however, was only found at wave 1. Finally, women were not less likely to be gainfully employed, but they consistently had a lower income than their male counterparts. Furthermore, participants from *fields of study* with unfavorable employment opportunities reported higher goal disengagement, lower well-being and lower work adaptation. Women were more likely to come from a field of study with unfavorable employment opportunities, which was due to the higher proportion of females in the humanities.

Finally, relations to other sociodemographic characteristics partnership status, children, and parental education were explored (not shown in the Tables in Appendix C). In brief, most correlations were either nonsignificant or small (mostly $r < .20$). Individuals who were in a partnership reported higher well-being (i.e., higher satisfaction with life, lower negative affect, higher purpose in life, higher positive relations). Individuals with children reported lower work-related goal engagement, were less likely to be employed, had lower

income, and reported lower negative affect. Higher parental education was related to higher income demonstrating a “SES begets SES” effect. All other correlations were nonsignificant.

Skewness and Kurtosis

In addition, skewness and kurtosis were examined to examine deviations from normal distribution. Kurtosis and skewness were below 1.0 for all central variables with a few exceptions. Negative affect was skewed and showed a positive kurtosis at all waves (e.g., wave 1: skewness = 1.16; kurtosis = .90). The kurtosis of goal engagement slightly exceeded 1 at two waves (e.g., wave 2: kurtosis = 1.08). Likewise, skewness and kurtosis of goal self-concordance were slightly higher than 1 at two waves (e.g., wave 3: skewness = -1.09; kurtosis = 1.28). I accepted these comparatively minor deviations from normality.

In sum, these preliminary analyses demonstrated the consistency and measurement invariance of the central constructs of the present study. Furthermore, evidence was presented, which supported the discriminant validity of all constructs. In the last set of preliminary analyses, an overview of means, concurrent intercorrelations and relations with sociodemographic characteristics was presented.

5.3 Univariate Change (Hypothesis 1)

In this section I present findings for my first hypothesis: Did motivational orientations, work-related OPS, work adaptation, and well-being change after graduation? I expected interindividual differences in intraindividual change and explored mean-level changes. First, however, rank-order stability was examined.

Rank-Order Stability

I examined rank-order stability by analyzing the intercorrelations of the same construct across time, which constitutes a popular approach to study differential change and continuity across time (Caspi et al., 2005). As can be seen in Table 5.3., the rank-order stabilities of all variables between subsequent time points were moderate to high. Looking at 1-year rank-order stability from wave 1 to 4 (last column in Table 5.3), correlations likewise were substantial. The highest correlations emerged for positive relations, autonomy, status goals, purpose in life, income, work-related goal engagement, life satisfaction, and learning goals.

Table 5.3

Rank-Order Stability

	Wave 1 to 2	Wave 2 to 3	Wave 3 to 4	Wave 1 to 4
Motivational orientations				
Learning goals	.62***	.61***	.64***	.62***
Status goals	.81***	.80***	.84***	.76***
Work goal self-concordance	.49***	.51***	.59***	.53***
Work OPS				
Work goal engagement	.77***	.75***	.75***	.69***
Work goal disengagement	.70***	.68***	.72***	.59***
Well-being				
Life satisfaction	.76***	.77***	.77***	.65***
Positive affect	.52***	.50***	.47***	.36***
Negative affect	.55***	.56***	.45***	.41***
Purpose	.72***	.76***	.78***	.72***
Autonomy	.76***	.78***	.82***	.76***
Positive relations	.80***	.82***	.85***	.80***
Work adaptation				
Work satisfaction	.42***	.50***	.52***	.16*
Work goal progress	.49***	.49***	.53***	.32***
Employment status	-	.43***	.54***	.27*** ^a
Income	-	.78***	.77***	.72*** ^a

Note. ^a Correlations between wave 2 and 4.

* $p < .05$. ** $p < .01$. *** $p < .001$.

High to medium 1-year rank-order stability emerged for work-related goal disengagement and self-concordance of work goals as well as for positive and negative affect. Smaller 1-year stability was found for work-related goal progress, employment status, and work satisfaction.

Change Analyses Using LGM

Considering the rather high rank-order stabilities, one may have concluded that individuals changed very little. However, these correlation coefficients did not provide insight into the dynamics of intraindividual change across time. For example, individuals with high levels of well-being may experience increases across time whereas those starting with low levels may experience decreases, which would result in high rank-order stability despite significant intraindividual change. Thus, I applied a different method to analyze change, latent growth curve modeling (LGM), which was introduced earlier.

First, a *linear LGM* was specified with a latent intercept, which had loadings of 1 on all manifest variables, and a latent linear slope. The slope had factor loadings of [0; 1; 2; 3] on the manifest variables measured at wave 1, 2, 3, and 4, respectively. Intercept and slope were allowed to covary. As can be seen in Table 5.4, the linear LGM fit the data well for most constructs, but not all.

I proceeded to test whether the linear model adequately described the form of change or whether change was better described as nonlinear using two different approaches. First (see Chan, 1998), an *unconditional LGM* was specified where the loadings of the latent slope variable were unconstrained for the last two waves. This model hence introduced no assumptions about the form of change. In order to avoid model misspecification the error variances at wave 1 were fixed to zero. This rendered the intercept equal to the manifest level at wave 1. Comparing the unconditional model to the linear model, the unconditional LGM yielded better fit for employment and income. As a second approach (M. Reitzle, personal communication, June, 2007) I compared the linear LGM introduced above to a linear LGM where all error variances were assumed to be equal across time. The logic behind this approach is that a linear LGM may show good fit, not because change is linear, but because all variance in the manifest variables, which remains unexplained by the intercept and the slope, is pushed into the error variances. Following this approach, additional nonlinear change was detected for the self-concordance of work goals, purpose in life, autonomy, and positive relations. Model fit and parameter estimates of the unconditional LGM are depicted in Table 5.5.

Table 5.4

Model Fit and Parameter Estimates of Univariate Linear LGM

	χ^2	df	CFI	RM SEA	Intercept		Slope		$r(I,S)$
					M	Var	M	Var	
Motivational orientations									
LEA	9.93	5	.99	.043	4.57***	.16***	.01	.004†	-.25
STA	1.89	5	1.00	.000	3.06***	.70***	.03*	.02**	-.13
WGS	8.17	5	.99	.035	8.89***	4.52**	.12*	.14	-.22
Work OPS									
WENG ^a	2.59	3	1.00	.000	3.75***	.23***	-.01	.01***	-.25*
WDIS	2.85	5	1.00	.000	2.91***	.30***	-.05***	.02***	-.23*
Well-being									
SWL	19.30**	5	.98	.074	5.12***	.98***	.00	.03*	-.35**
PA	7.89	5	.99	.033	2.91***	.37***	.04**	.027**	-.52**
NA	9.88	5	.99	.043	1.68***	.23***	-.06***	.008†	-.76***
PUR	10.27	5	.99	.045	4.71***	.33***	-.02†	.004	-.04
AUT	42.95***	5	.97	.121	3.88***	.32***	.03**	.003	.18
REL	11.40*	5	.99	.050	4.71***	.45***	.01	.005	-.12
Work adaptation									
WSA	8.59	5	.99	.037	3.33***	.94***	.12***	.11***	-.60***
WGP	8.05	5	.99	.034	6.84***	3.45***	.12*	.33***	-.48**
EMP	9.27**	1	.95	.126	.70***	.11***	.09***	.03***	-.59***
INC	6.40*	1	.99	.102	1233.86***	564485.95***	150.36***	34890.50***	-.42*

Note. LEA = Learning goals. STA = Status goals. WGS = Work-related goal self-concordance. WENG = Work-related goal engagement. WDIS = Work-related goal disengagement. SWL = Satisfaction with life. PA = Positive affect. NA = Negative affect. PUR = Purpose in life. AUT = Autonomy. REL = Positive relations. WSA = Work satisfaction. WGP = Work-related goal progress. EMP = Employment. INC = Income. I = Intercept. S = Slope. ^a Model fit estimates from model with latent variables constrained to zero.

† $p < .10$ * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5.5

Model Fit and Parameter Estimates of Univariate Unconditional LGM

	χ^2	df	CFI	RM SEA	Intercept		Slope		$r(I,S)$
					M	Var	M	Var	
WGS ^a	11.97*	4	.98	.062	8.92***	8.28***	.20	3.74***	-.70***
PUR ^a	7.67	4	.99	.042	4.73***	.47***	-.05*	.12***	-.53***
AUT ^{a,b}	3.61	2	1.00	.039	3.94***	.44***	-.02	.10**	-.42***
REL ^a	11.40*	4	.99	.060	4.74***	.54***	-.02	.09***	-.42***
EMP ^a	.04	1	1.00	.000	.67***	.22***	.16***	.13***	-.82***
INC ^a	.15	1	1.00	.000	1203.89***	700406.40***	232.63***	150819.83***	-.59***

Note. WGS = Work-related goal self-concordance. PUR = Purpose in life. AUT = Autonomy. REL = Positive relations with others. EMP = Employment. INC = Income. I = Intercept. S = Slope. ^a Constraint: $Var(\epsilon_1)$. ^b Model fit estimates from model with latent variables constrained to zero. * $p < .05$. ** $p < .01$. *** $p < .001$.

Interindividual Differences in Intraindividual Change

Significant or marginally significant slope variances were found for all constructs (see Table 5.4 and 5.5). Thus, significant interindividual differences in intraindividual change emerged, which indicated that individuals changed in different directions after graduation, thus, supporting my first hypothesis. Note that the slope variances of all constructs under consideration were significant when the unconditional LGM was applied.

Mean-Level Change

Finally, mean-level changes across time were explored. On the following pages, all significant mean-level changes are depicted. No figures are provided for constructs where no mean-level changes were observed. Please refer to Table 5.4 and 5.5 for information on slope means and significance levels. All observed mean-level changes were small. Note that the time intervals between waves were comparable across individuals as participants closely followed the schedule of data collection (see section 4.4.1).

Regarding motivational orientations, status goals increased across time (see Figure 5.2). Likewise, increases in the self-concordance of work goals were detected (see Figure 5.3), however, only when applying the linear LGM (see Table 5.4). No change in learning goals was observed.

Regarding work-related OPS, differential trajectories emerged: No mean-level changes in goal engagement were found, but significant decreases in goal disengagement were observed (see Figure 5.4).

Moreover, changes in well-being emerged. Positive affect increased (see Figure 5.6) and negative affect decreased (see Figure 5.7). No significant changes emerged for life satisfaction. Nonlinear change was observed in psychological well-being (see Figure 5.7 to 5.9). Purpose in life decreased from wave 1 to 2 and then remained rather stable. Changes in autonomy and positive relations followed a U-shaped curve: An initial drop from wave 1 to 2 was observed followed by a recovery.

Finally, increases were observed in all aspects of work adaptation (see Figure 5.10 to 5.13). Work satisfaction and work-related goal progress increased significantly across time. Likewise, employment status increased significantly across time. Whereas only 67% were employed at wave 2, 87% were in gainful employment at wave 4. Likewise, income increased. Whereas graduates on average earned 1232.46€ at wave 2, their average income was 1515.68€ at wave 4. Remember that employment status and income were not assessed at wave 1.

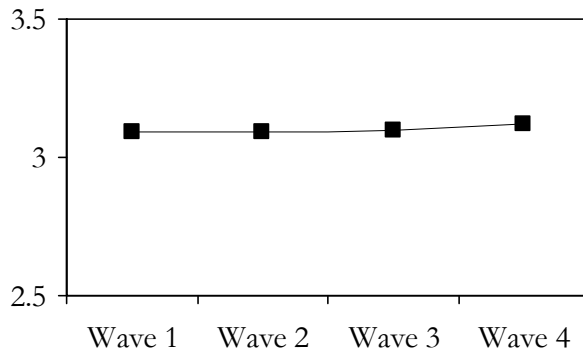


Figure 5.2. Mean-level change in status goals.

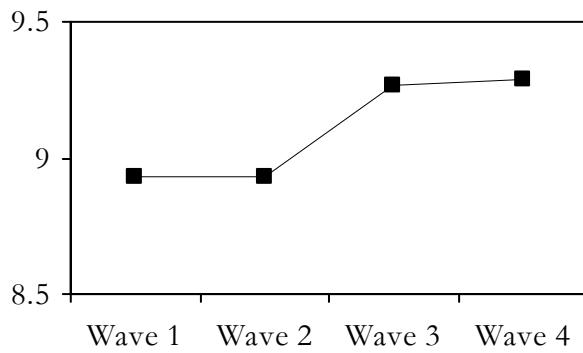


Figure 5.3. Mean-level change in self-concordance of work goals.

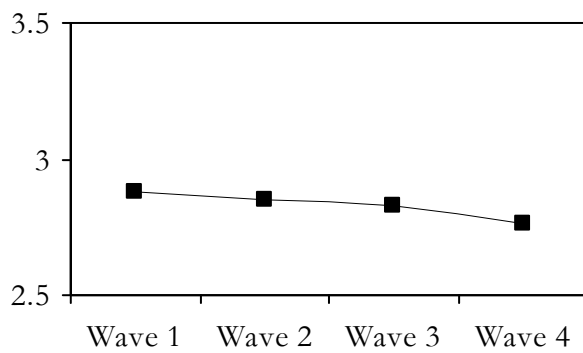


Figure 5.4. Mean-level change in disengagement from work goals.

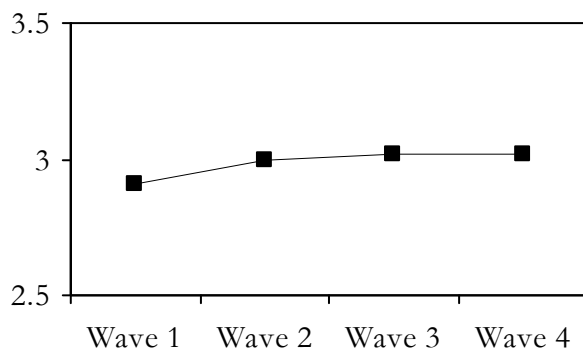


Figure 5.5. Mean-level change in positive affect.

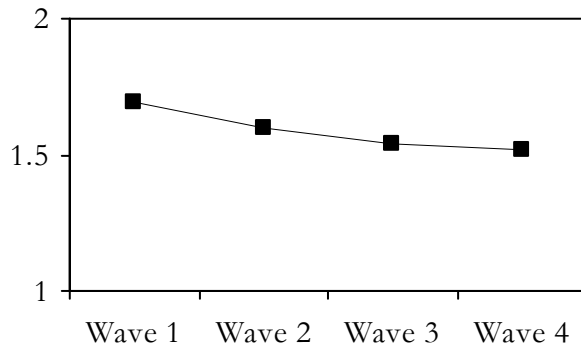


Figure 5.6. Mean-level change in negative affect.

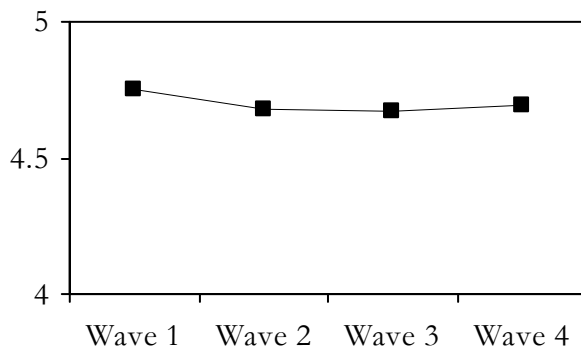


Figure 5.7. Mean-level change in purpose in life.

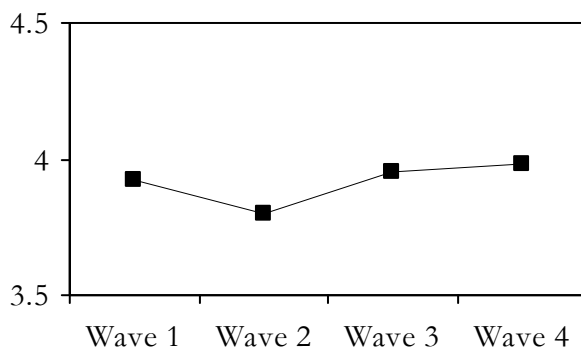


Figure 5.8. Mean-level change in autonomy.

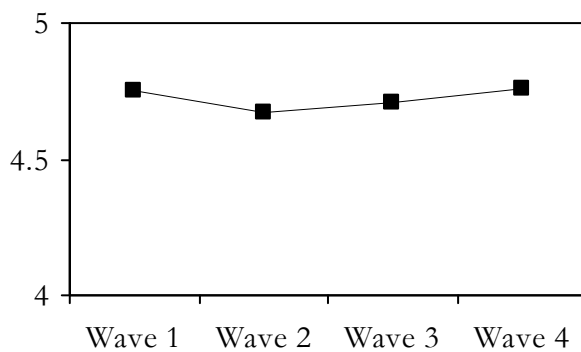


Figure 5.9. Mean-level change in positive relations.

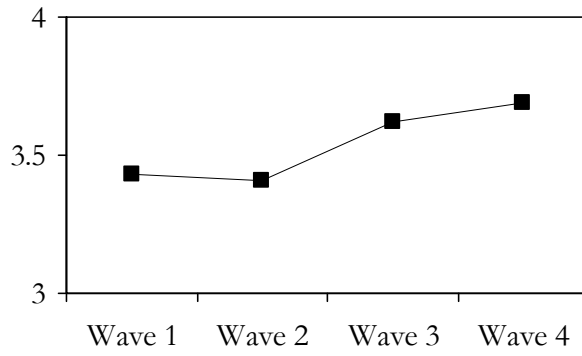


Figure 5.10. Mean-level change in work satisfaction.

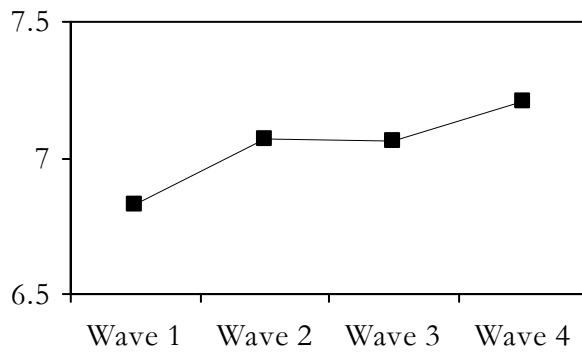


Figure 5.11. Mean-level change in progress towards work goals.

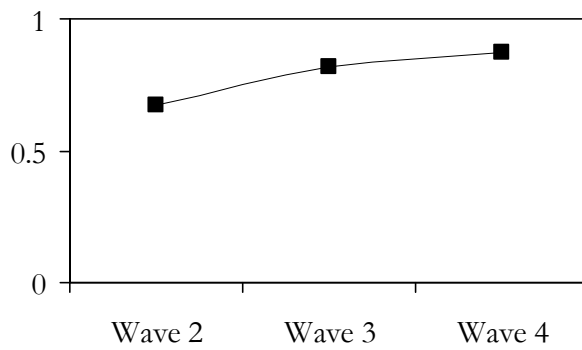


Figure 5.12. Mean-level change in employment.

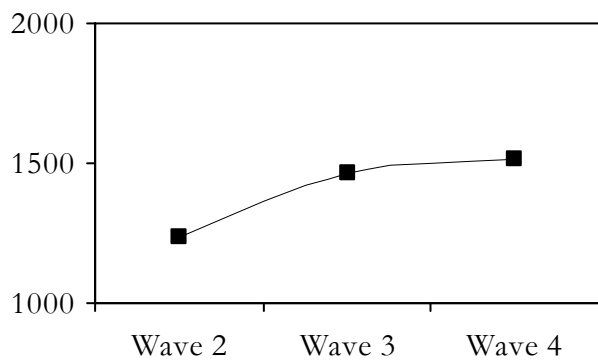


Figure 5.13. Mean-level change in income.

Summary

In this section, findings on univariate change were presented. All constructs showed medium to high rank-order stability across time. Using LGM, more differentiated insight was obtained into intraindividual and mean-level change. Linear and if appropriate unconditional LGM were specified for each construct. Interindividual differences in intraindividual change were observed for all constructs. Moreover, a variety of mean-level changes across time were found: Status goals increased, the self-concordance of work goals increased, work-related goal disengagement decreased, positive affect increased, negative affect decreased, purpose in life decreased, and all facets of work adaptation increased. Mean-level change in autonomy and positive relations followed a U-shaped curve. In sum, hypothesis 1 was supported and the central assumption for the following analyses was met. Whether or not mean-level trends were present, individuals changed in different directions after graduation.

5.4 Motivational Orientations and Work-Related OPS (Hypothesis 2)

In the following sections, results from the LGM analyses for hypotheses 2 to 6 are presented. The LGM approach was described in detail in section 5.1.

First, depending on what univariate LGM had fit the data best (Sayer & Willett, 1998), univariate linear or unconditional LGM were specified for each construct as described in the previous section. The same model specifications for these univariate LGM were used for their integration in the bivariate LGM and are not repeated here. In some rare cases – indicated in the respective Tables –, I applied a less restrictive unconditional LGM to a construct where the linear LGM had shown satisfactory fit. In these cases the slope variances in the unconditional LGM were considerably less constrained compared to the slope variances in the linear LGM, which allowed for a better detection of longitudinal associations.

In the bivariate LGM, two univariate LGM were integrated and between-intercept and between-slope associations were added as well as associations between the intercept of one construct and the slope of the other construct and vice versa. Furthermore, intercepts and slopes of each construct were allowed to covary. As the results for the univariate intercept-slope correlations were already reported in the previous section (see Table 5.4 and 5.5), they are not repeated here. Note that for the bivariate LGM involving life satisfaction six outliers with extremely low life satisfaction ($M \leq 2.40$) were excluded (cf. sample at wave 1: $M = 5.21$, $SD = 1.08$).

Second, in order to test moderator effects of employment opportunities a *multi-group LGM approach* was used. Specifically, a first group of graduates with favorable employment opportunities (i.e., medicine, psychology) was compared to a second group with unfavorable employment opportunities (i.e., architecture, humanities). In the next step, two models were specified. In the first model, all intercept and slope covariances were unconstrained. In the second model, the covariances were constrained to be equal. Whereas the first model allowed different parameters in the two groups, the second model assumed that associations between constructs were unaffected by employment opportunities. Finally, the two models were compared. Significant differences in model fit indicated that employment opportunities served as a moderator of the associations under investigation. I expected moderation by employment opportunities only with regard to associations with work adaptation (hypotheses 4 and 6).

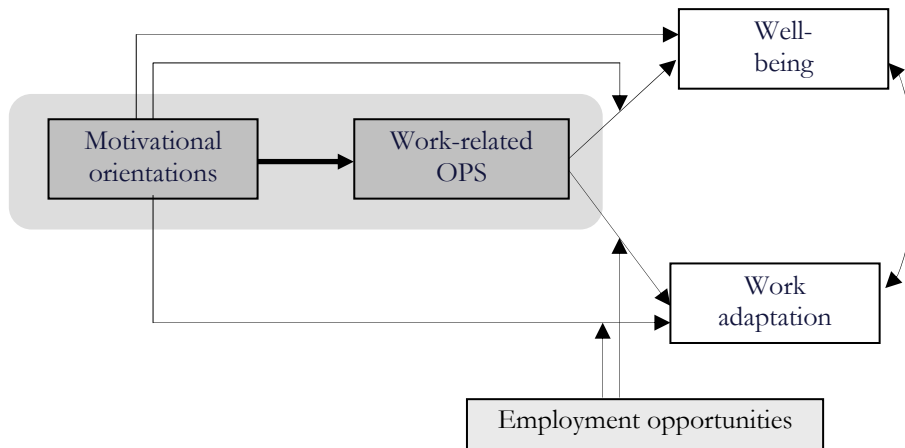


Figure 5.14.

Conceptual model with aspects considered in hypothesis 2 highlighted

However, I tested moderator effects for all hypotheses in order to examine the viability of this assumption. In order to streamline the following sections, the analyses testing the moderating role of employment opportunities are always presented at the beginning of each section.

In the following section, findings for hypothesis 2 are presented. Did motivational orientations predict engagement in and disengagement from work goals? Please refer to Figure 5.14, which presents the conceptual model, highlighting the aspects considered in this section.

The Role of Employment Opportunities

First, I examined whether employment opportunities moderated the relations between motivational orientations and work-related OPS. As expected, relations between learning goals and work-related goal engagement ($\Delta\chi^2(6) = 2.58, p = .859$) and disengagement ($\Delta\chi^2(6) = 7.87, p = .248$) were not moderated by employment opportunities. Likewise, moderation effects emerged neither for relations between work-related OPS and status goals (goal engagement: $\Delta\chi^2(6) = 6.13, p = .409$; goal disengagement: $\Delta\chi^2(6) = 5.92, p = .432$) nor self-concordance with work goals (goal engagement: $\Delta\chi^2(6) = 9.57, p = .144$; goal disengagement: $\Delta\chi^2(6) = 7.15, p = .307$).

Table 5.6

Motivational Orientations and Work-Related OPS: LGM Model Fit and Associations

	Work goal engagement ^a	Work goal disengagement
Learning goals		
χ^2 (df)	52.77(22)***	22.12(22)
CFI	.98	1.00
RMSEA	.052	.003
<i>r</i> (Intercept LEA, Intercept OPS)	.27***	.00
<i>r</i> (Slope LEA, Slope OPS)	.37*	.00
<i>r</i> (Intercept LEA, Slope OPS)	.03	-.22*
<i>r</i> (Intercept OPS, Slope LEA)	.00	-.18
Status goals		
χ^2 (df)	51.21(22)***	24.29(22)
CFI	.99	.99
RMSEA	.050	.014
<i>r</i> (Intercept STA, Intercept OPS)	.44***	-.31***
<i>r</i> (Slope STA, Slope OPS)	.15	-.09
<i>r</i> (Intercept STA, Slope OPS)	.00	.02
<i>r</i> (Intercept OPS, Slope STA)	-.03	.23*
Work goal self-concordance		
χ^2 (df)	53.66(20)***	29.30(21)
CFI	.98	.99
RMSEA	.057	.028
<i>r</i> (Intercept WGS, Intercept OPS)	.21***	-.17**
<i>r</i> (Slope WGS, Slope OPS)	.16*	-.20*
<i>r</i> (Intercept WGS, Slope OPS)	-.07	.02
<i>r</i> (Intercept OPS, Slope WGS)	.04	.04

Note. LEA = Learning goals. STA = Status goals. WGS = Work-related goal self-concordance. OPS = Work OPS. ^a Unconditional LGM for model with WGS.

* $p < .05$ ** $p < .01$ *** $p < .001$

Bivariate LGM: Motivational Orientations and Work-Related OPS

Associations between motivational orientations and work-related OPS were analyzed in the whole sample. The findings are displayed in Table 5.6. *Learning goals* were positively related to work-related goal engagement, both at the intercept as well as the slope level. That is, participants who placed more emphasis on learning as a life goal were also more engaged in their work goals. Moreover, increases in learning goals were related to increases in work-related goal engagement. Finally, a lagged effect in the expected direction was observed on goal disengagement: Participants with lower learning goals at graduation increased more in work-related goal disengagement across time.

Status goals were positively related to goal engagement and negatively to goal disengagement in the work domain. However, these associations were only found at the intercept level. That is, whatever resulted in changes in work-related goal (dis-) engagement,

status goals were not relevant. Furthermore, a reverse effect was found: Participants with higher work-related goal disengagement at graduation showed higher increases in status goals across time.

Finally, the *self-concordance of work goals* was positively related to goal engagement and negatively to goal disengagement in the work domain. These relations were found both at the intercept as well as the slope level. That is, participants with higher goal self-concordance showed higher engagement and lower disengagement regarding their work goals at graduation. Moreover, increases in goal self-concordance were related to increases in goal engagement and decreases in goal disengagement.

Summary

In this section, longitudinal associations between motivational orientations and work-related OPS were presented. As expected, increases in learning goals and the self-concordance of work goals were positively related to increases in work-related goal engagement. Moreover, individuals who started with higher learning goals and who increased the self-concordance of their work goals experienced lower decreases in work-related goal disengagement. Thus, these motivational orientations appeared to motivate adaptive goal engagement. Status goals, however, appeared not detrimental. These associations were not affected by employment opportunities as expected. Hypothesis 2 was largely supported.

5.5 Work-Related OPS and Well-Being (Hypothesis 3)

In this section, findings for hypothesis 3 are presented. Did work-related goal engagement and goal disengagement predict well-being? As in the previous section, bivariate LGM were specified. Please refer to Figure 5.15, which presents the conceptual model, highlighting the aspects considered in this section.

The Role of Employment Opportunities

First, I investigated whether employment opportunities moderated the relations between work-related OPS and well-being. Employment opportunities did not moderate associations between goal engagement and well-being (Life satisfaction: $\Delta\chi^2(6) = 7.30, p = .294$; positive affect: $\Delta\chi^2(6) = 3.47, p = .748$; purpose in life: $\Delta\chi^2(6) = 5.63, p = .466$; autonomy: $\Delta\chi^2(6) = 12.46, p = .052$, positive relations: $\Delta\chi^2(6) = 6.51, p = .368$) with one exception: The relation between goal engagement and negative affect was moderated by employment opportunities ($\Delta\chi^2(6) = 14.60, p < .05$). No moderation effects were found for the associations between goal disengagement and well-being (Life satisfaction: $\Delta\chi^2(6) = 7.30, p = .294$; positive affect: $\Delta\chi^2(6) = 9.43, p = .151$; negative affect: $\Delta\chi^2(6) = 5.96, p = .428$; purpose in life: $\Delta\chi^2(6) = 3.68, p = .720$; autonomy: $\Delta\chi^2(6) = 9.52, p = .146$, positive relations: $\Delta\chi^2(6) = 10.23, p = .115$).

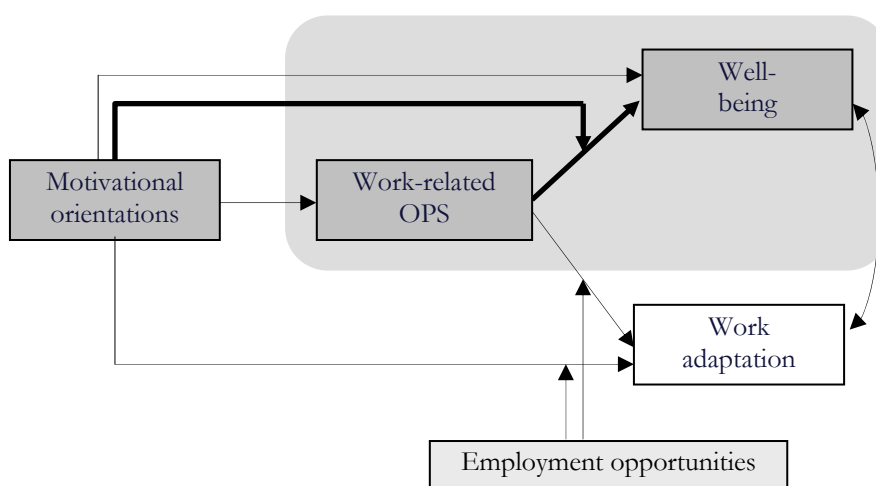


Figure 5.15.

Conceptual model with aspects considered in hypothesis 3 highlighted

Bivariate LGM: Work-Related OPS and Well-Being

I proceeded to investigate the relations between work-related OPS and well-being using the total sample except for the bivariate LGM for goal engagement and negative affect. In order to ease communication, two Tables are provided, Table 5.7 for relations with subjective well-being and Table 5.8 for relations with psychological well-being.

First, I analyzed relations with *work-related goal engagement*. Positive intercept and slope relations were found with almost all aspects of well-being: Individuals with higher goal engagement reported higher satisfaction with life, higher positive affect, higher purpose in life, and higher positive relations with others. Moreover, when individuals increased their goal engagement, they also experienced increases in all these facets of well-being. No associations with autonomy were found, maybe because of bad model fit. Finally, the association between goal engagement and negative affect was moderated by employment opportunities. Under favorable opportunities, a negative lagged effect was found indicating that individuals who started with higher goal engagement experienced higher decreases in negative affect across time. In contrast, under unfavorable opportunities, the relation pointed into the opposite direction.

Table 5.7

Work-Related OPS and Subjective Well-Being: LGM Model Fit and Associations

	Life satisfaction ^a	Positive affect	Negative affect
Work goal engagement ^b			
χ^2 (df)	63.43(22)***	50.46(22)**	92.09(44)***
CFI	.98	.98	.96
RMSEA	.060	.050	.046
<i>r</i> (Intercept WENG, Intercept WB)	.16**	.15*	.13 (-.16)
<i>r</i> (Slope WENG, Slope WB)	.28*	.42**	-.12 (-.16)
<i>r</i> (Intercept WENG, Slope WB)	.10	.01	-.58** (.34*)
<i>r</i> (Intercept WB, Slope WENG)	.01	.00	-.19 (-.01)
Work goal disengagement			
χ^2 (df)	33.65(22)	32.57(22)	35.81(22)*
CFI	.99	.99	.99
RMSEA	.032	.030	.035
<i>r</i> (Intercept WDIS, Intercept WB)	-.16**	-.18*	.14*
<i>r</i> (Slope WDIS, Slope WB)	-.10	-.22	.18
<i>r</i> (Intercept WDIS, Slope WB)	-.05	.15	-.04
<i>r</i> (Intercept WB, Slope WDIS)	.08	.11	-.11

Note. WENG = Work-related goal engagement. WDIS = Work-related goal disengagement. WB = Well-being. ^a Six outliers excluded. ^b Multi-group model for negative affect: favorable employment opportunities, for unfavorable employment opportunities in parentheses.

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 5.8

Work-Related OPS and Psychological Well-Being: LGM Model Fit and Associations

	Purpose in life	Autonomy	Positive relations
Work goal engagement			
χ^2 (df)	82.29(21)***	103.62(21)***	56.88(21)***
CFI	.97	.96	.98
RMSEA	.075	.087	.057
<i>r</i> (Intercept WENG, Intercept WB)	.42***	.08	.20***
<i>r</i> (Slope WENG, Slope WB)	.41***	.11	.33**
<i>r</i> (Intercept WENG, Slope WB)	-.06	-.01	-.06
<i>r</i> (Intercept WB, Slope WENG)	-.07	.00	-.02
Work goal disengagement			
χ^2 (df)	38.49(21)	66.99(21)***	41.07(21)**
CFI	.99	.97	.99
RMSEA	.040	.065	.043
<i>r</i> (Intercept WDIS, Intercept WB)	-.29***	-.16**	-.01
<i>r</i> (Slope WDIS, Slope WB)	-.24*	.05	.01
<i>r</i> (Intercept WDIS, Slope WB)	.06	-.01	-.07
<i>r</i> (Intercept WB, Slope WDIS)	.11	-.07	.10

Note. WENG = Work-related goal engagement. WDIS = Work-related goal disengagement. WB = Well-being.

* $p < .05$ ** $p < .01$ *** $p < .001$

In this group, individuals who started with higher goal engagement experienced higher increases in negative affect across time. As will be seen in the next section, this effect appeared only under low learning motivation.

Regarding *work-related goal disengagement*, intercept relations were found with almost all aspects of well-being. Individuals with higher goal disengagement reported lower satisfaction with life, lower positive affect, higher negative affect, lower purpose in life, and lower autonomy. Regarding longitudinal associations, goal disengagement appeared to have a specific effect on one selected aspect of psychological well-being, namely, purpose in life. When individuals increased their goal disengagement they experienced decreases in purpose in life. Thus, goal disengagement did not repair well-being across time.

Moderator Effects of Motivational Orientations on the Goal Engagement-Affect Link

I proceeded to examine the links between work-related goal engagement and affect in more detail in order to understand the effects of motivational orientations. To this aim, bivariate multi-group models were specified comparing groups with low vs. high learning goals, status goals, and goal self-concordance, respectively. For each construct, a mean composite score was construed across all waves; and then a median split was applied to distinguish between low vs. high levels.

First, moderating effects of *learning goals* were examined. I had predicted that the affective benefits of goal engagement would be particularly pronounced under high learning goals. Learning goals did not significantly moderate the link between goal engagement and positive affect ($\Delta\chi^2(6) = 6.44, p = .376$). However, a significant moderation effect emerged for negative affect ($\Delta\chi^2(6) = 13.08, p < .05$). As employment opportunities had also emerged as a moderator in the previous section, this variable was added as a second moderator, resulting in four groups to be analyzed: (1) low learning goals and favorable employment opportunities, (2) low learning goals and unfavorable employment opportunities, (3) high learning goals and favorable employment opportunities, and (4) high learning goals and unfavorable employment opportunities.

The following effects were found: Under low learning motivation, employment opportunities moderated the link between goal engagement and negative affect ($\Delta\chi^2(6) = 13.60, p < .05$). Under low learning motivation and favorable employment opportunities (*group 1*), goal engagement was positively related to negative affect at the intercept level ($r(\text{Intercept}, \text{Intercept}) = .19, p < .05$). Higher goal engagement at graduation was associated with lower increases in negative affect across time ($r(\text{Intercept}, \text{Slope}) = -.27, p < .05$). In contrast, under low learning motivation and unfavorable employment opportunities (*group 2*), goal engagement was marginally related to negative affect at the intercept level ($r(\text{Intercept}, \text{Intercept}) = -.22, p = .094$). Importantly, higher goal engagement at graduation was associated with steeper increases in negative affect across time ($r(\text{Intercept}, \text{Slope}) = .41, p < .05$). Thus, under low learning motivation, goal engagement prevented negative affect under favorable opportunities and promoted it under unfavorable opportunities.

Under high learning motivation, however, employment opportunities did *not* moderate the associations between work-related goal engagement and negative affect ($\Delta\chi^2(6) = 6.14, p = .407$). The slopes of goal engagement and negative affect were negatively related ($r(\text{Intercept}, \text{Intercept}) = -.11, p = .123$; $r(\text{Slope}, \text{Slope}) = -.36, p < .001$). That is, individuals with high learning motivation experienced decreases in negative affect when they increased their goal engagement, regardless of employment opportunities. Thus, goal engagement prevented negative affect when individuals were highly learning-oriented, regardless of employment opportunities. Moreover, under high learning motivation, individuals with higher negative affect at graduation increased more in their goal engagement across time ($r(\text{Intercept}, \text{Slope}) = .23, p < .05$).

Second, I investigated the moderating effects of *status goals*. Status goals moderated neither associations between goal engagement and positive affect ($\Delta\chi^2(6) = 6.20, p = .401$) nor negative affect ($\Delta\chi^2(6) = 6.51, p = .368$).

Third, moderator effects of the *self-concordance of work goals* were studied. No moderator effects emerged, neither for associations between goal engagement and positive affect ($\Delta\chi^2(6) = 6.78, p = .342$) nor negative affect ($\Delta\chi^2(6) = 6.51, p = .368$).

Summary

In this section, longitudinal associations between work-related OPS and well-being were presented. Overall, increases in goal engagement were associated with increases in life satisfaction, positive affect, purpose in life, and positive relations whereas increases in goal disengagement appeared unfavorable for purpose in life. The associations between goal engagement and negative affect differed depending on employment opportunities. When opportunities were favorable, goal engagement was associated with decreases in negative affect whereas increases were observed under unfavorable opportunities. However, this pattern was only found under low learning motivation. When learning motivation was high, goal engagement prevented negative affect, regardless of employment opportunities. All other associations were unaffected by employment opportunities. In sum, the findings largely supported hypothesis 3.

5.6 Work-Related OPS and Work Adaptation (Hypothesis 4)

In this section, findings for hypothesis 4 are present: Did work-related goal engagement and disengagement predict work adaptation? Again, bivariate LGM were tested. Please refer to Figure 5.16, which presents the conceptual model, highlighting the aspects considered in this section.

The Role of Employment Opportunities

First, I investigated whether employment opportunities moderated the relations between work-related OPS and work adaptation. Against my expectations, employment opportunities did not emerge as a moderator, neither of the relations between work adaptation and goal engagement (Work satisfaction: $\Delta\chi^2(6) = 7.79, p = .341$; Work-related goal progress: $\Delta\chi^2(6) = 9.35, p = .155$; Employment: $\Delta\chi^2(6) = 4.32, p = .633$; Income: $\Delta\chi^2(6) = 5.88, p = .437$) nor goal disengagement (Work satisfaction: $\Delta\chi^2(6) = 6.12, p = .410$; Work-related goal progress: $\Delta\chi^2(6) = 8.99, p = .174$; Employment: $\Delta\chi^2(6) = 1.64, p = .950$; Income: $\Delta\chi^2(10) = 9.86, p = .131$). As no moderator effects were found, I proceeded to analyze the bivariate associations in the whole sample.

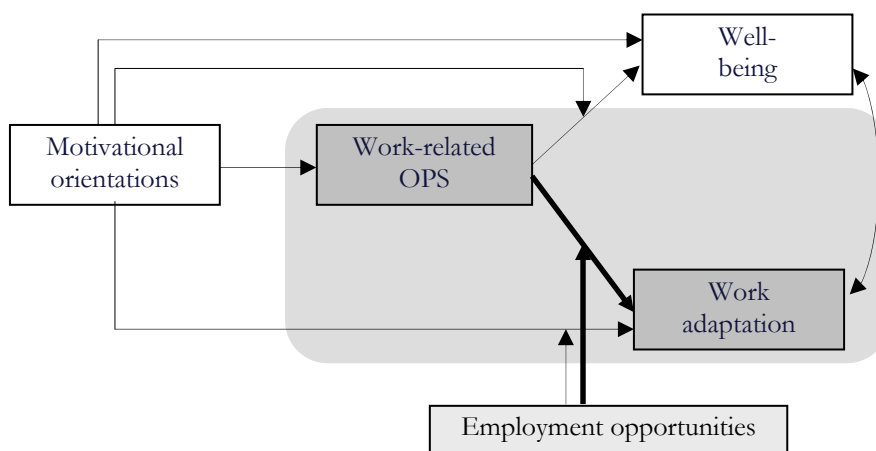


Figure 5.16.

Conceptual model with aspects considered in hypothesis 4 highlighted

Bivariate LGM: Work-Related OPS and Work Adaptation

Results are depicted in Table 5.9. First, *work-related goal engagement* was investigated. Positive intercept relations were found with all indicators of work adaptation. Individuals with higher goal engagement were more satisfied with their work situation, perceived higher progress towards their work goals, were more likely to be employed, and had a higher income. Remember that the baseline of employment status was measured at wave 2 (4 months after graduation) as participants, by design, were not eligible for employment at wave 1 (graduation). Thus, the positive intercept relation actually reflected a positive lagged effect of goal engagement (baseline at wave 1) on later employment status. Furthermore, the slopes of goal engagement and goal progress were positively related. That is, individuals who increased their work-related goal engagement also increased in their progress towards their work goals.

Moreover, two reverse effects were observed: Lower goal progress at graduation predicted increases in goal engagement. Moreover, individuals who were not employed at baseline (here wave 2) increased more in their goal engagement. That is, individuals who were initially less successful reacted with an increase in their goal engagement.

Table 5.9

Work-Related OPS and Work Adaptation: LGM Model Fit and Associations

	Work satisfaction	Work goal progress	Employ- ment ^a	Income ^a
Work goal engagement				
χ^2 (df)	55.78(22)***	48.56(22)**	38.22(14)***	39.12(14)***
CFI	.97	.98	.98	.98
RMSEA	.054	.048	.058	.059
<i>r</i> (Intercept WENG, Intercept WA)	.16*	.28***	.20***	.21***
<i>r</i> (Slope WENG, Slope WA)	.11	.36*	.01	-.02
<i>r</i> (Intercept WENG, Slope WA)	.08	-.02	.01	-.18*
<i>r</i> (Intercept WA, Slope WENG)	-.05	-.26*	-.18*	-.03
Work goal disengagement				
χ^2 (df)	29.65(22)	14.00(22)	9.97(14)	9.38(14)
CFI	.99	1.00	1.00	1.00
RMSEA	.026	.000	.000	.000
<i>r</i> (Intercept WDIS, Intercept WA)	-.31***	-.39***	-.22***	-.30***
<i>r</i> (Slope WDIS, Slope WA)	-.11	-.15	-.05	-.01
<i>r</i> (Intercept WDIS, Slope WA)	.11	.17	.14*	.07
<i>r</i> (Intercept WA, Slope WDIS)	.03	.10	.01	.03

Note. WENG = Work-related goal engagement. WDIS = Work-related goal disengagement. WA = Work adaptation.^a Baseline measured at wave 2.

* $p < .05$ ** $p < .01$ *** $p < .001$

Finally, a negative relation was found between the intercept of goal engagement and the income slope. That is, individuals who showed lower goal engagement at graduation showed steeper increases in income across time. At first glance, this finding seemed contradictory to the expectations. However, considering the positive intercept relations between goal engagement and income this finding probably reflected a ceiling effect: Graduates with lower goal engagement started with lower income and thus had more room to improve their income across time. In contrast, those with higher goal engagement probably hit the ceiling of typical newcomer salaries early on (cf. Teichler, 2007).

Second, *work-related goal disengagement* was studied. Negative intercept associations emerged with all indicators of work adaptation. That is, individuals with higher goal disengagement at graduation were less likely to be satisfied with their work, perceived lower progress towards their work goal, were less likely to be employed, and had lower income. Remember, again, that in the case of employment the intercept relation can be interpreted as a positive lagged effect of goal disengagement. One lagged effect emerged for employment: Participants who started with higher goal disengagement showed steeper increases in employment status. Again, this finding appeared contrary to the hypotheses at first glance, but with all likelihood reflected a ceiling effect, similar to the one described above for income.

Summary

In this section, longitudinal associations between work-related OPS and work adaptation were presented. Contrary to my expectations, employment opportunities did not moderate these associations. As expected, however, goal engagement appeared beneficial for work adaptation. Increases in goal engagement predicted increases in goal progress in the work domain. Moreover, individuals who showed higher goal engagement and lower goal disengagement at graduation were more likely to be employed four months later. Two unexpected negative lagged effects were found, which probably resulted from ceiling effects. Finally, two reverse effects indicated that a lack of work-related goal progress and employment elicited increases in goal engagement. In sum, hypothesis 4 was supported for some aspects but not all.

5.7 Motivational Orientations and Well-Being (Hypothesis 5)

In this section, findings for hypothesis 5 are presented: Did motivational orientations predict well-being? Again, bivariate LGM were tested. Please refer to Figure 5.17, which presents the conceptual model, highlighting the aspects considered in this section.

The Role of Employment Opportunities

Again, moderator effects of employment opportunities were examined at the beginning. As expected, the associations did not differ across groups with favorable vs. unfavorable opportunities. Employment opportunities did not moderate associations between learning goals and well-being (Life satisfaction: $\Delta\chi^2(6) = 11.57, p = .072$; positive affect: $\Delta\chi^2(6) = 6.46, p = .373$; negative affect: $\Delta\chi^2(6) = 12.43, p = .053$; purpose in life: $\Delta\chi^2(6) = 3.98, p = .679$; autonomy: $\Delta\chi^2(6) = 7.42, p = .284$; positive relations: $\Delta\chi^2(6) = 7.62, p = .267$). No significant moderation effects were found for status goals and well-being with one exception: Employment opportunities moderated the link between status goals and autonomy ($\Delta\chi^2(6) = 12.88, p < .05$). All other relations were unaffected (Life satisfaction: $\Delta\chi^2(6) = 9.13, p = .166$; positive affect: $\Delta\chi^2(6) = 8.87, p = .181$; negative affect: $\Delta\chi^2(6) = 10.69, p = .098$; purpose in life: $\Delta\chi^2(6) = 8.68, p = .192$; positive relations: $\Delta\chi^2(6) = 9.30, p = .158$).

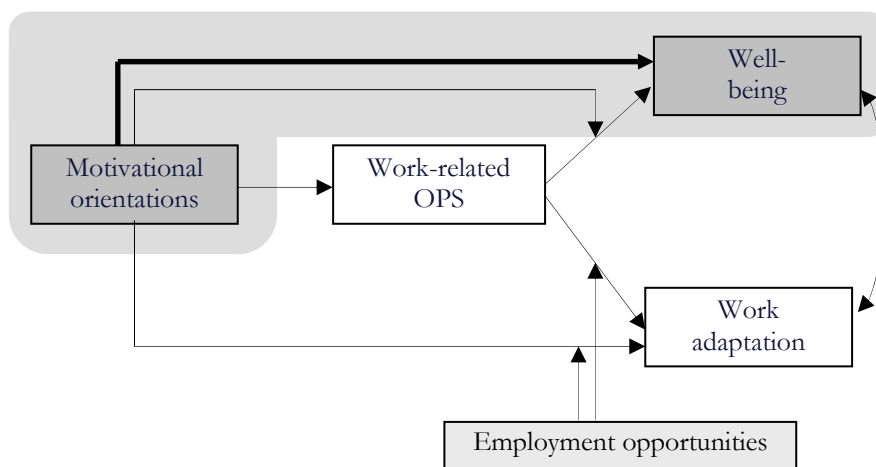


Figure 5.17.

Conceptual model with aspects considered in hypothesis 5 highlighted

Finally, employment opportunities did not moderate the relations between self-concordance of work goals and well-being (Life satisfaction: $\Delta\chi^2(6) = 7.83$, $p = .251$; positive affect: $\Delta\chi^2(6) = 1.73$, $p = .943$; negative affect: $\Delta\chi^2(6) = 6.18$, $p = .403$; purpose in life: $\Delta\chi^2(6) = .86$, $p = .990$; autonomy: $\Delta\chi^2(6) = 7.85$, $p = .250$; positive relations: $\Delta\chi^2(6) = 4.75$, $p = .576$).

Bivariate LGM: Motivational Orientations and Well-Being

I proceeded to investigate associations between motivational orientations and well-being in the whole sample except for associations between status goals and autonomy where a multi-group model was put forth. The findings are displayed in Table 5.10 (subjective well-being) and Table 5.11 (psychological well-being).

Table 5.10

Motivational Orientations and Subjective Well-Being: LGM Model Fit and Associations

	Life satisfaction ^a	Positive affect ^c	Negative affect ^c
Learning goals^b			
χ^2 (df)	39.16(22)*	22.19(21)	31.76(21)
CFI	.99	1.00	.99
RMSEA	.039	.010	.031
r (Intercept LEA, Intercept WB)	.08	.12*	-.07
r (Slope LEA, Slope WB)	.45*	.06	-.34*
r (Intercept LEA, Slope WB)	.13	.01	.20
r (Intercept WB, Slope LEA)	-.05	-.11	.06
Status goals			
χ^2 (df)	35.69(22)*	30.80(22)	25.47(22)
CFI	.99	.99	1.00
RMSEA	.035	.028	.017
r (Intercept STA, Intercept WB)	.11	.01	.06
r (Slope STA, Slope WB)	.13	-.08	-.19
r (Intercept STA, Slope WB)	.09	.17	-.13
r (Intercept WB, Slope STA)	.02	.11	.00
Work goal self-concordance			
χ^2 (df)	49.50(21)***	40.80(20)**	42.58(20)*
CFI	.98	.97	.97
RMSEA	.051	.045	.047
r (Intercept WGS, Intercept WB)	.36***	.30***	-.26***
r (Slope WGS, Slope WB)	.16	.17*	-.07
r (Intercept WGS, Slope WB)	.03	-.13*	.11
r (Intercept WB, Slope WGS)	-.20**	-.18**	.05

Note. LEA = Learning goals. STA = Status goals. WGS = Work-related goal self-concordance. WB = Well-being. ^a Six outliers excluded. ^b Unconditional LGM with positive and negative affect. ^c Unconditional LGM with work-related goal self-concordance.

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 5.11

Motivational Orientations and Psychological Well-Being: LGM Model Fit and Associations

	Purpose in life	Autonomy ^a	Positive relations
Learning goals			
χ^2 (df)	33.46(21)	78.13(21)***	29.18(21)
CFI	.99	.97	1.00
RMSEA	.034	.072	.027
<i>r</i> (Intercept LEA, Intercept WB)	.25***	.16**	.20***
<i>r</i> (Slope LEA, Slope WB)	.25	-.17	.15
<i>r</i> (Intercept LEA, Slope WB)	-.05	.18*	.02
<i>r</i> (Intercept WB, Slope LEA)	-.05	.10	-.13
Status goals			
χ^2 (df)	32.17(21)*	80.58(42)***	25.24(21)
CFI	1.00	.98	1.00
RMSEA	.032	.042	.020
<i>r</i> (Intercept STA, Intercept WB)	.19**	-.03 (-.09)	-.05
<i>r</i> (Slope STA, Slope WB)	-.03	-.02 (-.10)	-.10
<i>r</i> (Intercept STA, Slope WB)	-.05	-.17*(.19)	.06
<i>r</i> (Intercept WB, Slope STA)	.14	.11 (.05)	.19*
Work goal self-concordance			
χ^2	38.95(20)**	80.75(20)***	37.73(20)*
CFI	.99	.96	.99
RMSEA	.043	.077	.041
<i>r</i> (Intercept WGS, Intercept WB)	.43***	.24***	.35***
<i>r</i> (Slope WGS, Slope WB)	.21**	.10	.19*
<i>r</i> (Intercept WGS, Slope WB)	-.20**	.08	-.15*
<i>r</i> (Intercept WB, Slope WGS)	-.09	-.08	-.16*

Note. LEA = Learning goals. STA = Status goals. WGS = Work-related goal self-concordance. WB = Well-being. ^a Multi-group model for relations with status goals: Results for favorable employment opportunities, for unfavorable employment opportunities in parentheses.

* $p < .05$ ** $p < .01$ *** $p < .001$

First, *learning goals* were analyzed. Positive intercept relations were found with all aspects of psychological well-being. Thus, individuals with higher learning goals at graduation also experienced higher purpose in life, autonomy, and positive relations. Furthermore, increases in some aspects of well-being were predicted by learning goals. Individuals who started with higher learning goals experienced steeper increases in autonomy indicated by a positive intercept-slope association. Furthermore, slope-slope correlations emerged for life satisfaction and negative affect. That is, individuals who increased in their learning goals also increased in their life satisfaction and experienced decreases in negative affect across time.

Second, *status goals* were examined. Contrary to the notion of the maladaptiveness of status goals, a significant positive relation with purpose in life was found at the intercept level. No longitudinal associations were observed with one exception: Under favorable employment opportunities, individuals who started with higher status goals experienced lower increases in

autonomy. However, in all other cases, status goals appeared irrelevant for changes in well-being. Finally, a reverse effect was observed: Individuals who reported higher levels of positive relations experienced steeper increases in status goals across time.

Finally, studying the *self-concordance of work goals*, positive relations with all aspects of well-being emerged at the intercept level. That is, individuals who had work goals that were more concordant with their self reported higher satisfaction with life, higher positive affect, lower negative affect, higher purpose in life, higher autonomy, and higher positive relations. Moreover, slope-slope correlations pointed into the expected direction. Individuals who increased in goal self-concordance also increased in positive affect, purpose in life, and positive relations. In contrast to my expectations, however, three negative intercept-slope associations were observed, which indicated that individuals who started with lower goal self-concordance experienced higher increases in positive affect, purpose in life and positive relations. Thus, in the case of goal self-concordance, slope-slope associations with well-being were in the expected direction, but the intercept-slope associations were contrary to the expectations. Finally, mirroring the results obtained for work adaptation, two reverse effects were found. Individuals who started with lower well-being experienced higher increases in goal self-concordance: Individuals who started with lower life satisfaction and lower positive relations increased more in their goal self-concordance across time.

Summary

In this section, longitudinal associations between motivational orientations and well-being were presented. Learning goals were positively related to facets of psychological well-being at the intercept level and positively predicted life satisfaction and autonomy and negatively predicted negative affect across time. Status goals were not associated with well-being with one exception. Under favorable employment opportunities, status goals appeared to impair autonomy. Regarding the self-concordance of work goals, slope-slope correlations supported the expected positive relation to well-being, but intercept-slope relations pointed into the opposite direction. Finally, mirroring the results obtained for work adaptation, reverse effects emerged: Individuals increased the self-concordance of their work goals when they experienced lower well-being at graduation. Thus, some tenets of hypothesis 5 were supported, but not all.

5.8 Motivational Orientations and Work Adaptation (Hypothesis 6)

In the final section of this chapter, findings for hypothesis 6 are presented: Did motivational orientations predict work adaptation? Again, bivariate LGM were tested. Please refer to Figure 5.18, which presents the conceptual model, highlighting the aspects considered in this section.

The Role of Employment Opportunities

First, I examined whether relations between motivational orientations and work adaptation differed across favorable vs. unfavorable employment opportunities. Against my expectations, employment opportunities did not emerge as a moderator with one exception. The relations between learning goals and work satisfaction ($\Delta\chi^2(6) = 4.94, p = .551$), employment status ($\Delta\chi^2(6) = 3.42, p = .755$), and income ($\Delta\chi^2(6) = 3.99, p = .679$) were not moderated by employment opportunities. Likewise, no moderation effects emerged for status goals and work adaptation (work satisfaction: $\Delta\chi^2(6) = 5.99, p = .424$; work-related goal progress: $\Delta\chi^2(6) = 9.56, p = .145$; employment: $\Delta\chi^2(6) = 8.71, p = .191$; income: $\Delta\chi^2(6) = 5.41, p = .493$). Finally, associations between the self-concordance of work goals and work adaptation were not moderated by employment opportunities (work satisfaction: $\Delta\chi^2(6) = 3.65, p = .725$; work-related goal progress: $\Delta\chi^2(6) = 9.71, p = .137$; employment: $\Delta\chi^2(6) = 2.77, p = .837$; income: $\Delta\chi^2(6) = 6.02, p = .421$). However, a moderation effect was found for the link between learning goals and work-related goal progress ($\Delta\chi^2(6) = 13.15, p < .05$). Thus, I examined all associations in the whole sample, except for the link between learning goals and work-related goal progress.

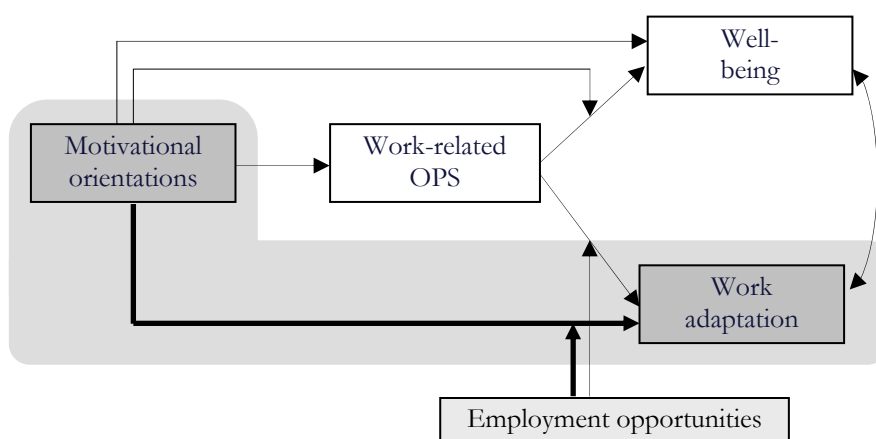


Figure 5.18.

Conceptual model with aspects considered in hypothesis 6 highlighted

Table 5.12

Motivational Orientations and Work Adaptation: LGM Model Fit and Associations

	Work satisfaction	Work goal progress ^a	Employ- ment	Income
Learning goals				
χ^2 (df)	32.60(22)	52.68(44)	17.15(13)	17.96(13)
CFI	.99	.99	.99	.99
RMSEA	.030	.019	.025	.027
<i>r</i> (Intercept LEA, Intercept WA)	.02	-.08 (.35***)	-.05	-.033
<i>r</i> (Slope LEA, Slope WA)	.27	.26 (.23)	-.16	-.02
<i>r</i> (Intercept LEA, Slope WA)	.01	.19 (-.17)	.11	-.09
<i>r</i> (Intercept WA, Slope LEA)	-.15	.00 (-.32)	.11	.05
Status goals				
χ^2 (df)	21.45(22)	22.61(22)	15.52(13)	11.97(13)
CFI	1.00	1.00	.99	1.00
RMSEA	.000	.007	.019	.000
<i>r</i> (Intercept STA, Intercept WA)	.06	.12	.04	.11
<i>r</i> (Slope STA, Slope WA)	-.17	.08	.08	.12
<i>r</i> (Intercept STA, Slope WA)	.13	.11	.06	.08
<i>r</i> (Intercept WA, Slope STA)	.15	-.01	-.07	.04
Work goal self-concordance				
χ^2 (df)	58.50(21)	45.06(21)**	21.00(12)	12.07(12)
CFI	.95	.87	.98	1.00
RMSEA	.058	.047	.038	.003
<i>r</i> (Intercept WGS, Intercept WA)	.34***	.35***	.18**	.17**
<i>r</i> (Slope WGS, Slope WA)	.11	.30**	.12	-.07
<i>r</i> (Intercept WGS, Slope WA)	-.04	-.14	-.08	-.16
<i>r</i> (Intercept WA, Slope WGS)	-.17*	-.21*	-.19*	-.01

Note. LEA = Learning goals. STA = Status goals. WGS = Work-related goal self-concordance. WA = Work adaptation. ^a Multi-group model for relations with learning goals: Results for favorable employment opportunities, for unfavorable employment opportunities in parentheses.

* $p < .05$ ** $p < .01$ *** $p < .001$

Bivariate LGM: Motivational Orientations and Work Adaptation

The results are shown in Table 5.12. First, I found that *learning* and *status goals* were largely unrelated to work adaptation. Neither intercept nor slope relations emerged with one exception: Under unfavorable employment opportunities, learning goals were related to work-related goal progress at the intercept level. Thus, graduates who faced unfavorable employment opportunities reported higher work-related goal progress when they had higher learning goals. However, no longitudinal associations were found.

Second, I examined the *self-concordance of work goals* and found positive intercept relations with all aspects of work adaptation. Thus, individuals with more self-concordant work goals were more satisfied with their work situation, perceived more progress towards

their work goals, were more likely to be employed, and had a higher income. In the case of employment, this could again be interpreted as a lagged effect. Moreover, a positive slope-slope relation emerged with goal progress. Thus, individuals who increased their goal self-concordance also experienced increases in their goal progress in the work domain. Finally, three reverse effects were found: Individuals who initially were less satisfied with their work situation, who perceived lower progress towards their work goals and who were less likely to be employed increased the self-concordance of their work goals across time.

Summary

In this section, longitudinal associations between motivational orientations and work adaptation were presented. No associations were found with learning and status goals. However, the self-concordance of work goals appeared to further selected aspects of work adaptation, employment and goal progress. Furthermore, reverse effects were observed in that a lack of work adaptation predicted increases in goal self-concordance. Against my expectations these associations were not affected by employment opportunities, with one exception. In sum, no associations between learning and status goals and work adaptation were found, contradicting hypothesis 6. However, the self-concordance of work goals appeared to promote aspects of work adaptation as predicted.

6 Discussion

After introducing the topic of this thesis in chapter 1 and laying out the theoretical and empirical background in chapter 2, I introduced my hypotheses in chapter 3. Then I described the method of my study in chapter 4 and the results in chapter 5. In the final chapter, I discuss my findings. In the first part, I provide an in-depth discussion of the findings of my longitudinal study on agency and adaptive development during the transition from university to work. In the second part, I discuss avenues for future research, potential applications, and I formulate a conclusion.

6.1 Agency and Adaptive Development during the Transition from University to Work: Findings of the Longitudinal Study

Driven by the question whether and how individuals can bring about adaptive outcomes in their development themselves, I conducted a 4-wave longitudinal study following 523 German graduates navigating the transition from university to work. The sample involved graduates from four selected fields of study with favorable and unfavorable employment opportunities. Adaptation was considered in two domains, well-being on the one hand and work adaptation on the other. In order to understand links between agency and adaptive development I drew from the action-phase model of developmental regulation (Heckhausen, 1999), which merges a focus on individual agency with contextual sensitivity (e.g., Silbereisen et al., 1986).

In the following section I discuss the findings from my longitudinal study. Table 6.1 provides an overview of the specific hypotheses and findings. The conceptual model is shown in Figure 6.1. First, I discuss how individuals changed during the transition after university. Second, I reconsider some assumptions of the action-phase model of developmental regulation. I proceed to provide an in-depth discussion of the findings for each hypothesis. I further consider reverse effects and bidirectional dynamics as well as relations between the two outcomes of adaptation, well-being and work adaptation. Moreover, I discuss contextual opportunities and constraints during the transition from university to work. I finish with a consideration of the limitations and strengths of my study. In order to ease communication I provide short summaries at the end of each part. Throughout this section, I weave in quotations from the semi-structured interviews that I conducted with fifteen participants one year after graduation. These quotations were selected to illustrate my interpretations and provide insights into points of convergence between the quantitative findings from the longitudinal study and these qualitative findings.

Table 6.1
Overview of Hypotheses and Findings

Hypotheses	Findings
Hypothesis 1: Univariate change	
Interindividual differences in intraindividual change	Supported
Exploration of mean-level changes	Status goals ↑ Work goal self-concordance ↑ Work goal disengagement ↓ Positive affect ↑ Negative affect ↓ Purpose in life ↓ Autonomy U Positive relations U Work satisfaction ↑ Work goal progress ↑ Employment ↑ Income ↑
Hypothesis 2: Motivational orientations and work-related OPS	
Learning goals	↑ work goal engagement ↓ work goal disengagement Supported
Status goals	0 work goal engagement 0 work goal disengagement Supported + reverse effect
Work goal self-concordance	↑ work goal engagement ↓ work goal disengagement Supported
Hypothesis 3: Work-related OPS and well-being	
Work goal engagement	↑ well-being Supported for all except autonomy; effect on negative affect moderated by opportunities and learning goals
Work goal disengagement	? well-being ↓ purpose in life
Moderation by motivational orientations	Supported for learning goals + reverse effect
Hypothesis 4: Work-related OPS and work adaptation	
Work goal engagement	↑ work adaptation Supported for work goal progress and employment; ceiling effect + negative feedback loops
Work goal disengagement	↓ work adaptation Supported for employment; ceiling effect
Moderation by employment opportunities	Not supported
Hypothesis 5: Motivational orientations and well-being	
Learning goals	↑ well-being Supported for life satisfaction, negative affect, and autonomy
Status goals	0 well-being Supported; ↓ autonomy under high opportunities + reverse effect
Work goal self-concordance	↑ well-being Not unanimously supported + negative feedback loops
Hypothesis 6: Motivational orientations and work adaptation	
Learning goals	↑ work adaptation Not supported
Status goals	0 work adaptation Supported
Work goal self-concordance	↑ work adaptation Supported for work-related goal progress and employment + negative feedback loops
Moderation by employment opportunities	Not supported

Note. ↑ = Increase (hypothesis 1) or positive association (hypotheses 2-6). ↓ = Decrease (hypothesis 1) or negative association (hypotheses 2-6). U = U-shaped change. ? = Association unclear. 0 = No association.

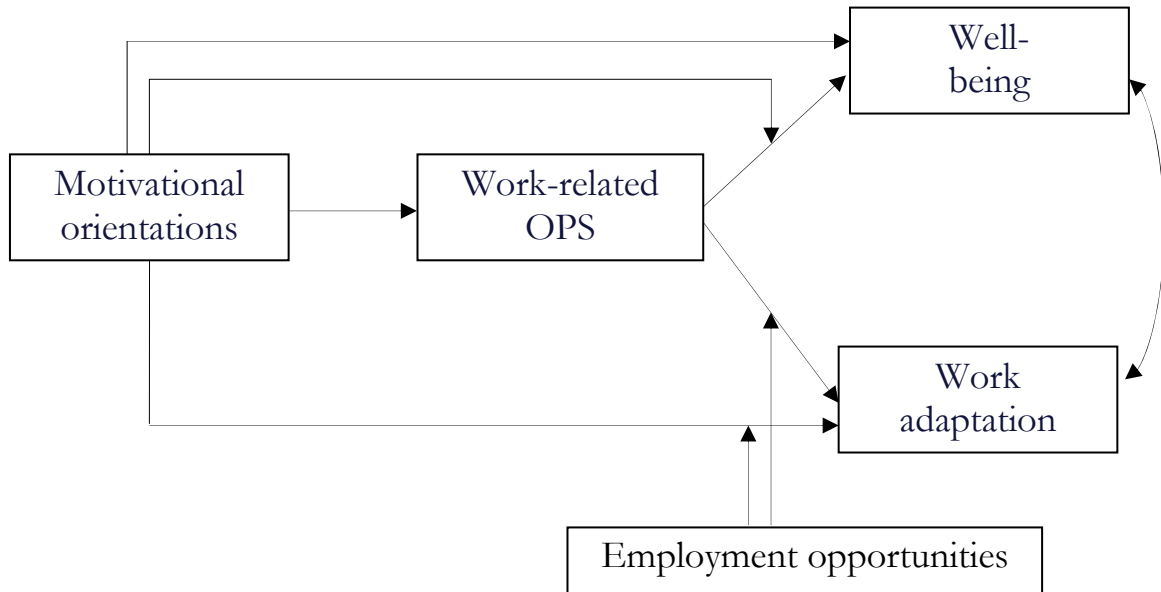


Figure 6.1. Conceptual model

Note. See text for the specific hypotheses.

6.1.1 Change across the Transition: Unique and Shared Pathways

The starting question of my thesis was whether individuals changed during the transition from university to work. Building on the assumption that individuals indeed would change, all following hypotheses focused on the prediction of these changes. Table 6.1 gives an overview of *hypothesis 1* and the findings, which are discussed now.

Unique and Shared Pathways

Individuals indeed changed in different directions after graduation. That is, whereas some individuals increased in a certain aspect of functioning, others remained stable, whereas others decreased. In statistical terms, interindividual differences in intraindividual change emerged for all constructs, which were detected when using latent growth curve modeling (LGM). In contrast, intercorrelations across time (i.e., rank-order stabilities) were high, which may have led to the erroneous conclusion that little change had occurred. How was that possible? Consider, for example, that individuals with high levels of well-being may increase across time whereas those starting with low levels may experience decreases in well-being. This may result in high rank-order stability despite significant intraindividual change.

Moreover, individuals followed shared pathways, which elucidated general developmental trends in the sample. In statistical terms, mean-level changes emerged. Thus,

change across the transition implied both unique as well as shared developmental pathways. In the following, I discuss the mean-level changes in motivational orientations, work-related goal (dis-) engagement, well-being, and work adaptation.

Change in Motivational Orientations: Increases in Status Goals and Work-Related Goal Self-Concordance

The first finding was surprising. Across time, an increase in status goals was observed. That is, on average, individuals increased their striving for high social status and prestigious positions after graduation. In contrast, no mean-level changes in learning goals were observed: On average, individuals remained stable in their striving to further their competencies and to broaden their horizon, which was already very high at the first wave.

Following H. Heckhausen's model of motivation (see Heckhausen & Heckhausen, 2006), status goals were conceived as extrinsic goals and learning goals were conceived as intrinsic goals with regard to work-related action. The finding that extrinsic life goals increased stands in contrast to Sheldon (2005) who found decreases in extrinsic life goals and increases in intrinsic life goals and Roberts et al. (2004) who observed decreases in all major life goals. However, both these studies investigated change across the college years, not after college. One explanation for the increase in status goals – which is in line with personality change towards increasing dominance until middle adulthood (Helson et al., 2002) – is that the new ecological system individuals entered, the world of work, made status goals more salient. Another explanation is provided by symbolic self-completion theory (Wicklund & Gollwitzer, 1982). Maybe individuals increased their striving for status because they had little opportunities to actually attain status. Symbolic self-completion theory provides a compelling explanation for other findings and is discussed in detail below. Consider Jacob's reasons why status goals became increasingly important for him after graduation:

Jacob: "During my studies, I didn't think that way. Now you think, because I just realized the start here was bloody expensive, terribly expensive. [...] And I think there is also somehow this, this somehow much greater, well, not desire, but the much greater need to gain security, also financially"

Finally, increases in the self-concordance of work goals emerged. That is, individuals became increasingly identified with their work goals or perceived themselves less driven to pursue them "because somebody else wants me to or because the situation seems to compel it". This is in line with predictions by self-determination theory (e.g., Deci & Ryan, 2002), which proposes an increase in autonomous motivation across the life span (Sheldon et al., 2005) drawing from Rogers' (1951) concept of the organismic valuing process. As a qualifier, I suggest that individuals regulate the self-concordance of their goals in accordance with contextual opportunities. I return to this idea in the second part of this chapter. Some

interviews provided insights into how individuals adjusted their goals towards increasing self-concordance across time:

Miriam: „Well, it is, like we discussed it before, necessary, and I have just come to identify with it. Even before I started, and now that’s how it goes. Well, I don’t want to say that this is my most inner desire and that I couldn’t imagine something else than what I do now. Well, I can think of nicer things than taking these ten exams now, but I find it ok”

Thus, Miriam became increasingly identified with her work goals, which still were not her “most inner desire”, but with which she felt “ok”. Such internalization processes were already formulated by Allport (1937): “A student who at first undertakes a field of study in college because it is prescribed, because it pleases his parents, or because it comes at a convenient hour, often ends by finding himself absorbed, perhaps for life, in the subject itself”.

Change in Work-Related OPS: Drop in Goal Disengagement

Individuals further changed in their use of work-related regulation strategies. Goal disengagement decreased across time. That is, on average, individuals were less likely to use downward social comparisons, external failure attributions, downward goal adjustment, and disengagement regarding their work goals. No mean-level change was observed in goal engagement.

The control strategies that serve goal disengagement are compensatory secondary strategies, which compensate for failure and are directed at the self (Heckhausen, 1999). However, why did individuals use disengagement strategies early after graduation, a time when they objectively could not have really *failed* in attaining their work goals? I suggest that individuals may use compensatory secondary strategies not only as a reaction to real, but also to anticipatory or imaginary failure experiences. Consider Benjamin who initially downgraded his occupational aspirations “simply to earn some money” and did not apply for jobs in his fields because he anticipated failure:

Benjamin: „I graduated towards the end of October last year and then I jobbed for six weeks. Simply to earn some money in industry. And then until May or so I simply enjoyed my life a little bit and didn’t do much at all [...] At that time I had no faith at all that I would get anything as an architect because the situation is just so bad. And that just took a bit my motivation away to write any applications at all [...] and then I said, well, now I have to try at least, otherwise I might reproach myself later on and was kind of surprised that it worked out pretty much right away”

Interestingly, it was again an anticipation process – anticipated regret (e.g., Zeelenberg, 1999) – that eventually motivated Benjamin to apply for jobs. Maybe spurred by the public debates about the gloomy situation for university graduates (e.g., Stolz, 2005), many graduates started

with high failure expectations and later on realized that things were not as bad after all, which eventually led them to reduce their disengagement strategies.

Change in Well-Being: Increase in Subjective Well-Being, Crisis in Autonomy and Positive Relations, Drop in Purpose in Life

A number of changes in subjective well-being were observed. Positive affect increased and negative affect decreased across time, converging with previous studies (cf. Roberts et al., 2006). That is, on average, individuals became increasingly happy and less depressed. This pattern of change supported the maturity principle, according to which become people become increasingly well-adjusted over the life span (Caspi et al., 2005). However, only affective states, but not life satisfaction improved. That is, on average, individuals remained stable in their cognitive evaluations of their own life.

Regarding psychological well-being, nonlinear mean-level changes were detected. Autonomy and positive relations dropped shortly after graduation and eventually recovered, bouncing back to or even surpassing (in the case of autonomy) initial levels. That is, shortly after graduation, individuals decreased in their sense of independence and self-determination and they experienced impairments in their relationships with others. However, these disturbances were only of a short-lived nature and individuals recovered subsequently. This reflects a crisis-like pattern of adjustment, maybe brought about by the demands of the new ecology individuals entered after graduation and to which they adjusted subsequently. A similar drop was observed for purpose in life, however, without a recovery. That is, across time individuals became less likely to believe that “there is meaning to present and past life” and to hold “beliefs that give life purpose”. The mean-level changes detected in this study converge with cross-sectional data drawing from a large age-heterogeneous sample (Ryff & Keyes, 1995): Across the life span, autonomy appeared to increase whereas positive relations increased or remained stable and purpose in life decreased. The drop of purpose in life is noteworthy as it contradicts the notion of increasing maturity across the life span (Caspi et al., 2005) for reasons that are unclear at present. As individuals grow older, they experience fewer gains and more losses (e.g., Heckhausen et al., 1989). Maybe losing one’s illusions or becoming more realistic with increasing age results in a decrease in purpose in life.

Change in Work Adaptation: Improvement

Finally, I found that individuals became increasingly satisfied with their work situation, perceived increasing progress towards their work goals, were more likely to be employed, and increased their income after graduation. These observed improvements in work adaptation were expected and in line with previous research (cf. Teichler, 2007). However, were these changes from bad to mediocre or from good to better? This question is discussed in detail later.

Summary

The present findings support the plasticity of human development (e.g., Baltes, 1987; Lerner, 1996). The change in life goals and goal self-concordance suggests that personality is not “set like plaster” as put forth by Costa and McCrae (1994). The observed changes in goal engagement and goal disengagement support a process perspective on developmental regulation (Heckhausen, 1999). And the changes in well-being – converging with recent research (e.g., Diener et al., 2006; Fujita & Diener, 2005; Lucas, 2007) – show that happiness is not fixed to a set point (e.g., Lykken & Tellegen, 1996), but changes. In sum, individuals changed during the transition from university to work, following both unique and shared pathways. Importantly, this change was not random, but systematic patterns were detected. All following hypotheses focused on the prediction of these changes. In statistical terms, predictors of interindividual differences in intraindividual change were examined.

6.1.2 Engagement in and Disengagement from Work Goals: Re-Considering Some Assumptions

The present thesis was organized around the constructs of work-related goal engagement and goal disengagement. On the one hand, I was interested in the predictors of these constructs. On the other hand I investigated their effects on well-being and work adaptation.

Before discussing these questions I want to re-consider some underlying assumptions: First, was work really a central developmental goal during the transition after university? Second, did individuals use the different control strategies for goal engagement and goal disengagement as posited by the action-phase model (Heckhausen, 1999)? And, finally, were goal engagement and goal disengagement distinct processes? Remember that all items were formulated in broad ways so that individuals could identify various actions (cf. Vallacher & Wegner, 1987) as work-related goal engagement and goal disengagement, whether they were looking for a job or already had one.

First, about 90% of participants rated work goals as somewhat or very important, supporting the centrality of work goals during the transition. The importance of work was also evident in virtually all interviews. Consider the following example:

Andreas: “At the moment, work is surely the most important [domain] as this is the basis for all the others, I think”

Work was also central and maybe particularly so for interviewees in difficult work situations. The following quotation by Anne who was unemployed at the time of the interview also illustrates the strongly normative character of work goals:

Anne: “I want to realize my potential through my work and on the other hand I think [...] that the societal pressure also plays a role or the pressure I put on myself and where I then think this finally comes from society, because it’s like this, because it’s all about work, and you count if you have work”

Thus, defying accounts of the “end of work” (Rifkin, 1995) and converging with previous research the present findings supported the centrality of work goals (e.g., Kalakoski & Nurmi, 1998).

Second, did the four different control strategies really serve goal engagement and goal disengagement? The measurement model provided satisfactory fit to the data: Goal engagement was comprised of three control strategies as postulated: Selective primary control (i.e., investing behavioral resources), selective secondary control (i.e., meta-volitional strategies), and compensatory primary control (i.e., seeking help). Goal disengagement was comprised of compensatory secondary control strategies (e.g., self-protective strategies, goal disengagement).

Third, were goal engagement and goal disengagement distinct processes, that is, did they show discriminant validity? A number of findings supported this assumption. Goal engagement was linked to proactive work-related intentions (e.g., attain additional qualifications) whereas goal disengagement was linked to intentions to switch to other occupational fields or to downgrade occupational aspirations. In addition, differential relations emerged with goal adjustment (Wrosch et al., 2003). Moreover, both constructs showed low intercorrelations and had differential effects as will be discussed below.

Summary

In this section, some preconditions for applying the action-phase model of developmental regulation were considered. Work was indeed a central goal for the vast majority of participants. Moreover, individuals used different control strategies for goal engagement and goal disengagement as postulated, which in turn were found to be distinct processes of developmental regulation.

6.1.3 Learning Goals and Goal Self-Concordance as Motivators of Work-Related OPS

Work goals were of central importance for the overwhelming majority of participants. However, wanting does not equal striving; and to have a goal is not automatically to pursue it. Thus, individuals differed considerably in how engaged they were in their work goals. Why? To date, the study of interindividual differences in developmental regulation is still in its infancy (Heckhausen & Heckhausen, 2006). Studying intrinsic and extrinsic goals and goal self-concordance as potential roads to work-related goal engagement and goal disengagement (*hypothesis 2*) the present thesis contributed to a previously unstudied field of research. Table 6.1 gives an overview of the hypotheses and findings. Note that reverse effects are discussed in a separate section later.

Learning Goals as a Motivator

First, learning and status goals were analyzed as examples of intrinsic and extrinsic life goals, respectively. In line with my predictions, learning goals positively predicted work-related goal engagement and negatively predicted disengagement from work goals. That is, individuals who increased their striving to further their competencies also became more engaged in their work goals across time. And those who started with lower learning goals became more disengaged from their work goals. In sharp contrast, status goals did not have such motivating effects, but were also not found to be harmful.

These findings can be interpreted from two perspectives. Learning goals may be good motivators because they converge with intrinsic needs as suggested by self-determination theory (e.g., Ryan & Deci, 2000). Or learning goals may be motivating because they are in line with contextual opportunities, as proposed by the action-phase model (Heckhausen, 1999). The interplay of individual goals and contextual demands was described, for example, by Katharina who reported extremely high learning motivation, which was also strongly required by her work context:

Katharina: „I am a very ambitious person after all and I want to do everything possible as fast as possible very, very well [...] Well, it's me in the first place and then of course my occupational environment because, of course, they obviously also want me to perform well, but I think this is, of course, a thing, that is somehow mutually dependent”

Regarding the role of learning goals, both self-determination theory and the action-phase model provide viable explanations. However, the finding that status goals were not harmful is in contrast to propositions by self-determination theory on the “dark side” of extrinsic goals (e.g., Kasser & Ryan, 1993, 1996) and converges with findings by others, also critical of this

proposition (e.g., Carver & Baird, 1998; Nickerson et al., 2003). Specifically, they are in line with findings by von Rosenstiel et al. (2000) who showed that the context-congruency of goals is decisive for their motivational functionality during organizational entry.

Given that work is a central domain through which social status is attained in modern societies, why did status goals not motivate work-related goal engagement? I propose that the effect of status goals was nil because the transition ecology did not reward, but also did not punish these goals. Thus, learning goals promoted engaging in work as an on-time transition goal whereas status goals did not – because learning goals were in line with the transition ecology, which provided many opportunities to develop competencies, but little opportunities to attain high status (cf. Blossfeld et al., 2005).

Goal Self-Concordance as a Motivator

The second predictor of work-related goal engagement and goal disengagement examined in this thesis was the extent to which individuals perceived their work goals as concordant (i.e., congruent) with their self. As expected, goal self-concordance positively predicted goal engagement and negatively predicted goal disengagement. That is, individuals who increased in their identification with their work goals and the enjoyment they derived from pursuing them also became more engaged and less disengaged with regard to these goals across time.

Thus, work as a developmental goal – an internalized developmental task (Heckhausen, 1999) stemming from normative demands (Havighurst, 1976) – appeared to elicit more striving, exactly when individuals re-constructed this goal not as an external demand, but as their own desired state (cf. Austin & Vancouver, 1996). I derived this idea from linking the action-phase model (Heckhausen, 1999) to the goal self-concordance model (Sheldon & Elliot, 1999). The study showed that the motivating effects of self-concordant goals generalized across low and high-opportunity contexts. Thus, even under relatively gloomy conditions, individuals benefited when their goals were more congruent with their self rather than following situational imperatives. I come back to the role of high vs. low-opportunity contexts below.

From the perspective of motivational psychology (Heckhausen & Heckhausen, 2006), these findings have interesting implications because they highlight the importance of motivational congruence. To date, research in motivational psychology has focused on the congruence between explicit and implicit motivation (e.g., Brunstein, Schultheiss, & Grässman, 1998; Hofer & Chasiotis, 2003), that is, the congruence between the goals individuals are aware of and their motives, which are not consciously accessible (McClelland et al., 1989). The present findings suggest that congruence *within* the explicit motivational system

(i.e., between goals and the self) may another important aspect of congruence. High congruence within the explicit motivational system could be a marker of high congruence between explicit and implicit goals, which provides an interesting avenue for future research.

Finally, it is interesting to consider the high mean levels of goal self-concordance – and also learning goals – in the study. Likewise, many interviewees described it as central to find fulfillment in their work. Consider for example Christine:

Christine: “To have a profession [Beruf] in the long run, which I enjoy, at least for a large part. Surely not always and every day and every minute. But which fulfills me in general, satisfies me, and is in some way also my calling [Berufung]”

This underscores that individuals adapted their goals towards orientations that were adaptive during the transition after university as suggested by the action-phase model (Heckhausen, 1999).

Summary

The present study demonstrated that individuals differed in systematic ways in their engagement in an on-time developmental goal, which opens new avenues for future research. Drawing from the action-phase model (Heckhausen, 1999), context-congruency was assumed and found to be essential in understanding what motivated adaptive developmental regulation: Learning goals promoted work-related goal engagement and prevented disengagement, and so did goal self-concordance (Sheldon & Elliot, 1999). Status goals, prime examples of extrinsic goals, did not have motivating effects, but were also not found to be harmful (cf. Kasser & Ryan, 1993).

6.1.4 Effects of Work-Related OPS on Well-Being and Work Adaptation

As demonstrated, individuals differed in how strongly they were engaged in their work goals. However, did goal engagement or goal disengagement have any effects? Were these regulation strategies really promoting or preventing adaptive development? Or were contextual constraints so strong that agency made no difference? This section sketches findings on the effects of work-related goal (dis-) engagement on well-being (*hypothesis 3*) and work adaptation (*hypothesis 4*). Table 6.1 provides an overview of the hypotheses and findings. Reverse effects are discussed in a separate section later.

Benefits of Goal Engagement for Well-Being

As expected, work-related goal engagement predicted many aspects of well-being, specifically, life satisfaction, positive affect, purpose in life, and positive relations. That is, individuals who increased in their goal engagement also experienced increases in all these facets of well-being. Findings for negative affect were more complex and are discussed in detail below.

The findings regarding life satisfaction and positive affect – core ingredients of subjective well-being (e.g., Diener, 2000) – were in line with numerous studies drawing from the action-phase model (e.g., Heckhausen et al., 2001; Wrosch & Heckhausen, 1999; Wrosch et al., 2000) and the meta-analysis by DeNeve and Cooper (1998). Goal engagement appeared to promote well-being regardless of whether individuals faced bright or gloomy employment prospects in accordance with Haase et al. (in press-a) who found context-independent positive effects of goal engagement on positive affect.

Moreover, the present study is the first to show that these benefits also extended to the realm of psychological well-being (Ryff & Keyes, 1995). Engaging in work goals furthered individuals' sense of purpose in life. Moreover and remarkably, a positive spill over effect from work-related goal engagement to positive relations was observed. Thus, individuals' social relations did not suffer, but were in contrast enhanced when individuals were engaged in their work goals, a remarkable finding in view of the potential for work-family conflict (e.g., Greenhaus & Beutell, 1985). Such positive spill-over effects were also found in an intervention study (Salmela-Aro, 2007). However, engaging in work goals did not further feelings of autonomy. Maybe the effect was not detected due because of model fit, but this finding may also warrant a substantive interpretation. Due to its normative connotation, work-related goal engagement may not affect autonomy, which is seen in someone who “is self-determining and independent” and “able to resist social pressures” (Ryff & Keyes, 1995).

Goal Engagement Can Make You both Happy and Sad

The effects on negative affect were very interesting: Under favorable employment opportunities, goal engagement prevented negative affect as would be expected based on the benefits of on-time goal engagement. In stark contrast, however, goal engagement appeared to promote negative affect when opportunities were unfavorable. That is, graduates from fields with unfavorable employment prospects, who started with higher goal engagement, experienced both increases in happiness *and* sadness across time. This finding underscores the importance of a context-sensitive perspective on developmental regulation (e.g., Heckhausen, 1999; Noack, 1990; Silbereisen et al., 1986). Goal striving inevitably brings about failure and setbacks (Schulz & Heckhausen, 1996) particularly in unfavorable contexts. Thus, under

unfavorable opportunities, individuals may experience setbacks alongside with progress, which makes goal engagement both painful and pleasant.

However, this effect did *not* emerge under high learning motivation. Thus, when engagement in work goals was colored by the higher goal of furthering competencies and broadening one's horizon, individuals did not derive frustration from goal engagement, even in unfavorable contexts. In statistical terms, under high learning goals, employment opportunities did not moderate the relation between goal engagement and negative affect. This finding provides a key insight into the motivational effects of learning goals: Learning goals may be good motivators because they buffer individuals from affective impairments during goal pursuit when times are rough. Maybe these affective benefits occur because learning goals make it possible to re-construct failure experiences as learning opportunities as described by Simone, a graduate in the humanities:

Simone: „I think that I have developed quite a bit since I started working here. But I think there still are so many things where I can really learn something each day, which is difficult sometimes, where I also have to suck it up sometimes and stuff, but where I really – I simply want to be a good journalist”

It should be noted that status goals and goal self-concordance did not serve as moderators. Future research is needed to examine the proximal mechanisms of their motivating (or nonmotivating) effects.

Finally, these findings provide differentiated insight into what Pomerantz, Saxon, and Oishi (2000) called the psychological trade-offs of goal investment. In their study, goal engagement predicted both positive emotions as well as worries. The present findings demonstrate that when opportunities for goal attainment are scarce and individuals do not have high learning goals, goal striving can bring about troubles, fear, and depression – besides happiness.

Consolation through Goal Disengagement?

In addition to goal engagement, I studied the effects of goal disengagement and found negative concurrent relations with almost all aspects of well-being. One longitudinal effect emerged: When individuals increased their disengagement from work goals, they experienced decreases in their sense of purpose in life. This effect was described by one of the interviewees:

Michael: “If you stop doing things, life becomes suddenly meaningless”

These findings demonstrate that disengaging from work goals during the transition did not ameliorate unhappiness. Thus, in the case of a highly normative on-time developmental goal, self-protection and disengagement strategies may provide no benefits for well-being. On the

contrary, they may even impair a sense of purpose and meaning. Andreas described why downward social comparisons did not provide uplifts for him:

Andreas: “And other colleagues, they had to take unqualified jobs. Training, such call center things. One is even working at McDonalds and such things. Simply to make money. Well, in comparison to them, I am doing quite well in my field with my work situation. But this is also not very encouraging and heartening [...] It can always get worse. I am quite aware of that. But that’s not very heartening”

Thus, the present findings demonstrate the maladaptiveness of disengaging from an on-time developmental goal. Consider, in contrast, the importance and adaptiveness of disengaging from off-time and unattainable goals, as demonstrated impressively in numerous studies (e.g., Heckhausen et al., 2001; Wrosch & Heckhausen, 1999; Wrosch et al., 2007). The action-phase model states that when opportunities for goal attainment have vanished, continued goal engagement is harmful and individuals are better off disengaging from the now futile goals. Interestingly, the benefits of being able to let go off such unattainable goals and to engage in new, meaningful goals extend beyond subjective well-being and affect even physical health (e.g., Wrosch et al., 2007).

Work Adaptation: Benefits of Goal Engagement and Harm of Goal Disengagement

Finally, work-related goal engagement was not only beneficial for well-being; it also positively predicted selected aspects of work adaptation across high- vs. low-opportunity contexts. Goal engagement predicted work-related goal progress: Individuals who increased their work-related goal engagement also increased in their perceived progress towards these goals. Moreover, effects were observed on an objective outcome: Individuals who were more engaged and less disengaged at graduation were more likely to be employed four months after graduation.

These findings converge with a recent study by Duckworth et al. (2007) who showed that what they called “grit” – a concept similar to goal engagement – predicted work success, even controlling for intelligence. Moreover, the findings are in accordance with Haase et al. (in press-a) although in this study effects were only found in unfavorable contexts. In sum, these findings challenge the negative accounts of pervasive structural constraints (for an overview of structuralist positions see Evans, 2007).

However, goal engagement did not have an effect on work satisfaction, which was surprising in view of the positive effects on life satisfaction in general. Maybe the single-item measure did not capture the effect although it had proven reliable and valid in previous studies (e.g., Wanous et al., 1997). Goal engagement also had no effect on income, maybe because newcomer incomes are not very differentiated (cf. Teichler, 2007).

Two unexpected effects have to be noted. First, individuals with lower goal engagement at graduation showed steeper increases in income across time. Considering the positive intercept relations between goal engagement and income this probably reflected a ceiling effect: Graduates with lower goal engagement started with lower income and thus had more room to improve their income across time. A similar ceiling effect probably explained the positive effect of goal disengagement on employment. Individuals who were more disengaged were more likely to be employed later on because they had more room to improve their employment status.

Summary

The study showed that engagement in work as an on-time developmental goal indeed promoted adaptive development, supporting predictions by the action-phase model (Heckhausen, 1999). Extending previous research, benefits were found not only for subjective, but also for psychological well-being. Importantly, goal engagement brought about both positive as well as negative affect when opportunities were unfavorable and individuals did not have high learning goals. This highlights the importance of contextual sensitivity (e.g., Silbereisen et al., 1986) and illustrates one mechanism underlying the motivational effects of learning goals. The study further showed that disengagement from work as an on-time developmental goal did not repair well-being, but harmed purpose in life. Furthermore, goal engagement promoted selected aspects of work adaptation. This challenges accounts of pervasive structural constraints as the effects were found across high- vs. low-opportunity contexts.

6.1.5 Steps towards an Integrated Model

As was shown, specific motivational orientations fostered the adaptive engagement in work goals, which in turn fostered well-being and selected aspects of work adaptation. However, what were the direct effects of motivational orientations on outcomes of adaptation? In the following, the effects of motivational orientations on well-being (*hypothesis 5*) and work adaptation (*hypothesis 6*) are briefly discussed. I proceed to consider how future research may integrate these findings in one model. Please refer to Table 6.1 for an overview of these hypotheses and findings. Note again that reverse effects are discussed in a separate section below.

Scattered Relations between Motivational Orientations and Well-Being

First, scattered relations were observed between life goals and well-being. Learning goals predicted some, but not all aspects of well-being. Individuals who increased their learning goals also experienced increases in life satisfaction and decreases in negative affect. Moreover, those who started with higher learning goals at graduation experienced steeper increases in autonomy across time. In contrast, status goals appeared not harmful for well-being with one exception: Power goals appeared to impair autonomy under favorable employment opportunities.

Again, the positive effects of learning goals on well-being can be interpreted from the perspective of the action-phase model (Heckhausen, 1999) or self-determination theory (e.g., Ryan & Deci, 2000). The finding that status goals appeared not harmful (cf. Kasser, 1993, 1996) – with the exception of one single effect, which was observed only in one group and which I am reluctant to interpret –, however, supported predictions by the action-phase model. Moreover, the direct buffer effect of learning goals on negative affect underscores the affective benefits derived from learning goals. Interestingly, autonomy was the only aspect of psychological well-being (Ryff & Keyes, 1995), which was affected by life goals. Remember that work-related goal engagement had not shown an effect on this outcome.

Second, relations between work-related goal self-concordance and well-being were also not unanimous. I had predicted positive effects drawing from the action-phase model (Heckhausen, 1999) and the goal self-concordance model (Sheldon & Elliot, 1999). Supporting this expectation, many interviewees perceived goal self-concordance and well-being as closely related, as for example:

Benjamin: „A satisfied life means that you do the things that you really want to do and, um, well, that you are happy [...] that what you do everyday is what suits you and with what you identify”

However, the effects of self-concordance of work goals on well-being in the longitudinal study were complex and differentiated. On the one hand, as goal self-concordance increased, positive affect, purpose in life, and positive relations increased in line with the expectations. On the other hand, individuals who started with lower goal self-concordance experienced steeper increases in positive affect, purpose in life and positive relations across time. In statistical terms, positive slope-slope associations were found alongside with negative intercept-slope associations. Maybe, again, ceiling effects were at work: Individuals with lower goal self-concordance started with lower well-being and had more room to improve across time.

Scattered Relations between Motivational Orientations and Work Adaptation

No direct effects of learning and status goals on work adaptation were observed, against my expectations. The absence of effects stands in contrast to McClelland's research on the relations between achievement and power motivation and economic success (McClelland, 1961, 1975; McClelland & Franz, 1992). However, work-related goal self-concordance predicted selected aspects of work adaptation, similar to those predicted by goal engagement. Individuals who increased the self-concordance of their work goals also increased in their progress towards these goals. Moreover, those who started with higher goal self-concordance at graduation were more likely to be employed four months later. These objective benefits of goal self-concordance converge with predictions by Sheldon and Elliot (1999) and findings by Bono and Judge (2003).

Towards an Integrated Model

Thus, the direct effects of motivational orientations on outcomes of adaptation were rather scattered. Why only some aspects of adaptation and not others were affected remains an open question for future research. Moreover, future research may integrate the various findings from hypotheses 2 to 6 in a unified model. As was shown earlier, motivational orientations promoted adaptive on-time goal engagement, which in turn fostered adaptation. In statistical terms, goal engagement was not a mediator in many cases because few direct effects were observed as was just demonstrated. However, in a substantial sense one may well speak of a mediational chain in that motivational orientations triggered goal engagement, which eventually fostered adaptation. This idea rests on research by Conger and colleagues who were concerned with different developmental aspects, but put forth a similar mediation argument (e.g., Conger, Conger, Elder, Lorenz, Simons, & Whitbeck, 1993). In the present thesis, as was stated earlier, my aim was to gain a profound understanding of the bidirectional dynamics occurring between different aspects of functioning. Building on the present findings, future research may proceed to test these relations in a unified model.

Summary

During the transition from university to work, the direct effects of motivational orientations on well-being and work adaptation were rather scattered. When effects were found, they supported predictions drawn from the action-phase model (Heckhausen, 1999) and the goal self-concordance model (Sheldon & Elliot, 1999). As was shown earlier, motivational orientations promoted adaptive on-time goal engagement, thus, triggering a chain of events,

which in the end fostered adaptation (cf. Conger et al., 1993). It remains a task for future research to integrate these links in one model.

6.1.6 Reverse Effects: Symbolic Self-Completion and Negative Feedback Loops

Until now, I focused exclusively on effects in one direction in a theory-guided manner. However, the longitudinal design of the study made it possible to also consider reverse effects. In statistical terms, whereas the previous sections focused on the effects of one construct A on the slope of another construct B, I now turn to discuss reverse effects of B (intercept) on the slope of A.

Status Goals in the Light of Symbolic Self-Completion Theory

Surprising reverse effects were observed for status goals. First, individuals who reported higher work-related goal disengagement at graduation increased more in their status goals across time. At first glance, this seemed puzzling. Why did individuals who distanced themselves from work – a central life domain for attaining social status – increase their striving for this very goal?

Symbolic self-completion theory (Wicklund & Gollwitzer, 1982) offers a compelling framework for interpreting this and other findings. Drawing from the work of Lewin (e.g., 1926) and his students (e.g., Zeigarnik, 1927), the theory posits that individuals search for alternative symbols to “complement” their self when they cannot attain central, self-defining goals. Symbolic self-completion theory has received empirical support (e.g., Brunstein & Gollwitzer, 1996) and posits that failure to attain such goals prompts the striving for and use of symbolic indicators of goal progress including status symbols and prestige affiliations. Thus, in the present study, disengaging from work – a highly central goal for the overwhelming majority of participants – may have triggered an increased desire for high social status as a substitute in order to make the incomplete self “whole” again. This finding converges with Wicklund and Gollwitzer (1981) who showed that a lack of work experience prompted self-symbolizing behavior.

The second reverse effect was observed with regard to positive relations. Individuals with better positive relations at graduation increased more in their status goals across time. This finding contradicts the stereotype of social isolation triggering status striving and can also be explained drawing from symbolic self-completion theory. Building on symbolic interactionism (Cooley, 1902), the theory suggests that self-definitions depend heavily on their social acknowledgment. In the present study, individuals who were socially well-connected

maybe were all the more aware of their lack of status resulting in a compensatory rise in status goals. Consider, for example, Christine who experienced very positive relations with her family:

Christine: „I have dear people around me, I have a very dear family, well, very great relationships”

At the same time, she was aware of her dependence on her parents and low status compared to her brother, a situation which she described as embarrassing and unjust:

Christine: „Even though I am not a materialist, um, it is just embarrassing for me to be dependent on my parents, financially, with 27, or after university [...] But my brother, he also just has a university degree, also works his ten hours a day and earns very, very much money now, he’s in a consulting firm now. I just see an injustice there”

Finally, I suggest that the observed mean-level increase in status goals, which was described at the beginning of this chapter was also due to processes of symbolic self-completion. Consider Nina who expressed high dissatisfaction with her “student status” and for whom the goal of having an own apartment – a status symbol – played a central role:

Nina: „I just thought that I would get out of this student status, which I am not, of course”. Interviewer: “Okay”. Nina: „Well, my goal, just to give an example, often you are being asked: Where do you see yourself in five years [...] I simply want to be able to afford the luxury of an own apartment”

As was argued above, most individuals had little opportunities to attain high status after graduation (cf. Blossfeld et al., 2005), which may have rendered status goals all the more salient.

Negative Affect Predicted Increases in Goal Engagement – Only Under High Learning Goals

Negative affect was found to predict goal engagement when learning goals were high. That is, highly learning-oriented individuals with higher negative affect at graduation became more engaged in their work goals across time.

This finding is in accordance with theoretical propositions by Schulz and Heckhausen (1997) and findings by Nagy et al. (2005) who argued that “avoiding worry does not pay” and demonstrated that worries promoted goal engagement during the transition from school to work. Furthermore, this finding provides further insight into the proximal affective mechanisms underlying the motivating function of learning goals. Learning goals may not only buffer individuals from experiencing negative affect during goal engagement as shown above. Learning goals may also lead to constructive responses when negative affect occurs as they may promote attempts to change the situation that is causing such negative affect. Besides negative affect no other reverse effects of well-being were observed, in contrast to theoretical

propositions and empirical findings (e.g., Fredrickson, 2001; Lyubomirsky et al., 2005; Schulz & Heckhausen, 1997).

Lack of Work Adaptation Predicted Increases in Goal Engagement

Whereas the reverse effect of well-being on goal engagement was more specific, two broad reverse effects were found for work adaptation: Individuals who perceived little progress towards their work goals and were less likely to be employed became more engaged in their work goals across time. Thus, a lack of work success predicted increases in goal engagement. This is in line with predictions by the action-phase model, which posits increases in goal striving when goal attainment is endangered, for example when approaching a deadline or under structural constraints as has also been shown empirically (cf. Haase et al., in press-a).

Lack of Adaptation Predicted Goal Self-Concordance

The final set of reverse effects was astonishing. A lack of well-being and work success predicted not decreases but increases in the self-concordance of work goals. Individuals who were less satisfied with their life, experienced lower positive affect, and lower positive relations at graduation increased more in the self-concordance of their work goals across time. Similar effects occurred when individuals reported lower work satisfaction, lower progress towards their work goals, and were less likely to be employed.

These findings are in sharp contrast to the so-called Matthew effect (Merton, 1960): "For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath" (Matthew 25:29 King James Bible). The Matthew effect and the related concepts of upward spirals (Sheldon & Houser-Marko, 2001) and accentuation (e.g., Caspi et al., 2005) refer to dynamic processes where two aspects, A and B, have a mutual and positive influence on each other across time.² Matthew effects have been found in various domains, for example for well-being and success: Success makes people happy; and happiness makes people successful (e.g., Lyubomirsky et al., 2005). Similarly, Matthew effects have been shown for scientific recognition and productivity (Merton, 1960), reading and cognitive development (Stanovich, 1986) and also for goal self-concordance and attainment (Sheldon & Houser-Marko, 2001).

However, such positive feedback loops are not the only possible pattern of dynamics (e.g., Carver & Scheier, 1998). It is as well possible that A has a positive effect on B while B has a negative effect on A, as demonstrated in the present study: Goal self-concordance

² The Matthew effect may also refer to dynamics solely occurring within one construct A: Higher initial levels of A may predict steeper increases in A across time leading to "rich-get-richer and poor-get-poorer" patterns of development.

promoted adaptation whereas a lack of adaptation predicted increases in goal self-concordance. In fact, the action-phase model (Heckhausen, 1999) posits such negative feedback loops for goal engagement and attainment as described above and found in the present study: Goal engagement predicted goal attainment; and a lack of goal attainment predicted intensified engagement (i.e., “try harder”). Similar negative feedback loops were put forth by Brunstein and Gollwitzer (1996) in their work on performance after failure. Negative feedback loops are, in fact, homeostatic processes and can be found in various motivational phenomena: For example, loneliness makes people seek company; and a lack of company makes people feel lonely. Or negative affect fosters goal disengagement; and a lack of goal disengagement brings about negative affect (Heckhausen, Carmody, Haase, & Poulin, 2008).

The negative feedback loop found for goal self-concordance in the present study makes all the more sense if one considers that goal self-concordance promoted goal engagement, which in turn promoted adaptive development. Thus, individuals adjusted their goals as if they intuitively knew how to best promote their goal engagement. Consider Christine who described how, as a reaction to constraints in the labor market, she increasingly came to identify with her work goals:

Christine: „Maybe one year before graduation I maybe would not have said, I want to accomplish this training or do and accomplish. But now it is somehow consistent [...] Because of the situation in the labor market, as a clinical psychologist you first have to do this training in order to find any job at all. And, um, that’s why it became my personal goal”

These findings are in convergence with Sheldon, Arndt, and Houser-Marko (2003) who found that “people may have a positive bias toward changing their minds in directions most likely to be SWB [subjective well-being] enhancing“. The present study showed that individuals did not only change their motivational orientations and goal engagement to promote their subjective, but also their psychological well-being and work adaptation.

Summary

The reverse effects found in this thesis were astonishing. Goal disengagement and positive relations promoted status goals, which I interpreted as symbolic self-completion effects (Wicklund & Gollwitzer, 1982). Moreover, various reverse effects emerged, which constituted negative feedback loops. Individuals with high learning goals increased their goal engagement when they experienced negative affect. A lack of work success predicted increased goal engagement, in line with assumptions by the action-phase model (Heckhausen, 1999). Moreover, a lack of well-being and work success predicted increases in goal self-concordance, reminiscent of findings by Sheldon et al. (2003).

6.1.7 Relations between Well-Being and Work Adaptation

Although not the central question of this thesis, I would like to consider the relations between well-being and work adaptation, the two dimensions of adaptive development studied in this thesis, in view of the debate surrounding suitable indicators of adaptive development (e.g., Schulz & Heckhausen, 1996).

Subjective vs. Psychological Well-Being

The findings showed that the various aspects of well-being were not just indicators of one underlying “feel-good” factor. Rather, their moderate intercorrelations underscored the discriminant validity of subjective (Lucas, Diener, & Suh, 1996; Watson et al., 1988) and psychological (Ryff & Singer, 2006) well-being. Converging with findings from other narrative studies (Bauer et al., 2005; King, 2001) the two dimensions of well-being – subjective and psychological (i.e., eudaimonic) well-being (e.g., Keyes et al., 2002; Ryan & Deci, 2001) – also emerged in the interviews as exemplified in the following quotes:

Daniel: “When I have a happy day. Yes, when I am successful, it can also be something small. When I accomplish something. When I feel efficacious and when I, yes, when I have coffee with my colleagues and this is fun or so, humor, when I am being entertained, this is great. When I am going to the movies and watch some great movie there. Experiences”

Michael: “And for me happiness is that my own curiosity, that I can always pursue, well, what I enjoy and stuff. There are, well, all kinds of things could be interesting for me. And when you engage in them for some time you come to realize: Well, now you know everything or everything you should know about this. Then you stop doing it [...] This is happiness for me“

Thus, whereas in Daniel’s view being “happy” was the core ingredient of well-being, Michael perceived an ongoing striving towards personal growth (“my own curiosity”) as a central aspect of well-being. Both accounts of well-being provide differential and complementary perspectives on well-being.

Subjective vs. Objective Work Adaptation

Furthermore, I would like to consider the relations between the various indicators of work adaptation, specifically, between the two subjective – work satisfaction and goal progress – and the two objective indicators – employment and income. Goal progress and satisfaction were closely related in line with predictions by Carver and Scheier (1990). The correlations with the objective indicators were smaller. These findings support the discriminant validity of the different indicators of work adaptation and illustrate the divergence of subjective and objective indicators.

Does Money Buy You Happiness?

Finally, how was well-being related to work adaptation? I want to focus on one selected question that has been a core theme in happiness research: Were individuals with higher income happier? The observed relations between income and subjective well-being were in convergence with the work of Kahneman, Krueger, Schkade, Schwarz, and Stone (2006) on the “focusing illusion”: Most people believe that money makes them happy and “focus, in part, on conventional achievements when evaluating their life” (p. 1908), resulting in a positive relation between income and life satisfaction. Correlations in the present study were around .30, similar to those reported by Kahneman et al. (2006). However, individuals may overestimate the effect money has on their everyday well-being. In fact, correlations between income and short-term positive and negative affect were considerably lower, around half this size (except for wave 2) in the present study converging with Kahneman et al. (2006). Moreover, the present study revealed notably small, mostly even nil, correlations between income and two facets of psychological well-being: Autonomy and positive relations. Note that the subjective indicators of work adaptation, satisfaction and goal progress, were more strongly related to well-being than objective indicators.

Summary

In this section, relations between the two central outcomes of adaptation, well-being and work adaptation, were discussed. Together, the findings underscored the importance of conceiving adaptive development as a multi-dimensional construct. Arguably, the “pursuit of happiness” is important for many people. However, well-being is a highly subjective criterion, which depends on subjective reference frames and, as shown here, diverges considerably from objective indicators of “conventional achievements” (i.e., income).

6.1.8 The Transition from University to Work as Developmental Context

Throughout the previous sections, I repeatedly referred to the contextual conditions during the transition from university to work. In this section, I explicitly discuss these contextual conditions. I begin with a discussion of the differences, or similarities as will be seen, between high- vs. low-opportunity contexts.

The Transition from University to Work in Different Fields of Study: Smooth Glide or Bumpy Ride?

An important feature of the present study was the two-group design. As the study involved graduates from selected fields of study with favorable (i.e., medicine, psychology) and

unfavorable (i.e., architecture, humanities) employment prospects it was possible to test whether an effect that emerged in high-opportunity contexts was also found – or was even stronger – in low-opportunity contexts. To my surprise, almost all associations were unaffected by employment opportunities. In statistical terms, no moderator effects emerged. A first suspicion one might have is that the groups did, in fact, not differ a lot from each other.

Bearing in mind that the sample was not recruited as a representative sample – although it appeared reasonably unbiased with regard to central sociodemographic characteristics – some numbers may be instructive. One year after graduation, 1.3% (medicine), 2.5% (psychology), 11.4% (architecture), and 10.2% (humanities) were unemployed, which converges with findings from the HIS graduate panel (Briedis & Minks, 2004). Considering that all study participants held university degrees, the unemployment rates in the two latter fields are remarkably high. Importantly, however, the present findings did not support the notion of a “generation internship” (Stolz, 2005), converging with findings by Briedis and Minks (2007). Only ten individuals were doing an internship one year after graduation.

These findings shed light on claims that “[i]n most European countries, the transition from higher education to employment seems to have been smoother than the public debates about the problems caused by the expansion of higher education and the precarious labour market situation in general suggest” (Teichler, 2007, p. 21). In the present study, the transition appeared as a rather rocky ride for graduates in fields with unfavourable prospects. Consider, for example, the mean income one year after graduation in the humanities in the sample, 921 Euro, which is below the at-risk-for-poverty threshold in Germany (Deutscher Bundestag, 2005). In contrast, graduates in medicine earned over twice as much. In sum, these findings supported the distinctiveness of the high- vs. low-opportunity contexts.

Agency Makes a Difference or Does It?

In view of these findings, it was all the more remarkable that most associations generalized across high- and low-opportunity contexts. Regardless of whether individuals faced bright or gloomy employment prospects, learning goals and work-related goal self-concordance appeared to prevent work-related goal disengagement and to promote goal engagement, which in turn promoted aspects of well-being and work adaptation. An important moderator effect was found for the effect of goal engagement on negative affect, which was discussed earlier.

In the interviews, it became apparent that some graduates from fields with objectively bright prospects were not happy at all with their work situation as for example Matthias who described the situation of his colleagues in medicine:

Matthias: „On the whole, very dissatisfied. [...] Many enjoy working, but it is simply definitely too much. They are partly absolutely overburdened. [...] They don't know what work they want to do and are unsure which positions they should accept. Positions, well, there are plenty of it”

This quotation illustrates that objective and subjective realities (cf. Gergen, 2001) may diverge fundamentally and highlights, again, the importance of considering both subjective as well as objective indicators of adaptation.

Learning and Status Goals during the Transition

I argued that opportunities to attain high social status were limited during transition. Supporting this stance, in the present study, opportunities to enter secure employment situations – not to speak of high-status positions – were limited even for graduates in the fields with bright prospects: About 80% of those currently employed had fixed-term contracts, with the highest number in medicine. Thus, despite better employment opportunities, the transition was not a “done deal” even for graduates in fields with bright prospects. Rather, the majority appeared to be in so-called “precarious” employment situations (e.g., Dörre, 2005). This converges with findings from a large multi-nation study by Blossfeld et al. (2005) who demonstrated how globalization processes including economic deregulation translate into increasing insecurity at the individual level and affect particularly young people.

However, while opportunities for status attainment were limited, opportunities for learning were manifold as individuals took over new tasks and roles and got to know new people and organizational structures (see also Ashford & Black, 1996; Chan & Schmitt, 2000; Kammeyer-Mueller & Wanberg, 2003). Many interviewees described their manifold opportunities for learning, developing competencies, and broadening their horizon during the transition:

Katharina: “I am very satisfied [...] You really have opportunities to grow each day”

Jacob: “I have many options to do things here and I have great possibilities in my office and I am completely involved there and I learn a tremendous lot”

Laura: “I really like that because I can further my own development enormously”

Thus, despite scarce opportunities to attain status goals, learning opportunities were manifold, which presumably made learning goals so adaptive. As societies move towards post-

industrialism, economic changes have led to an increasing importance of knowledge (Bell, 1973); and the demand for high-skilled workers is assumed to rise in the future (Karoly, 2007). Thus, learning goals may become ever more important in the future due to processes of social change (e.g., Silbereisen et al., 2006).

In sum, despite the differing employment opportunities the experiences individuals made during transition from university to work maybe were not all that different. This might explain why few differences were observed between fields with favorable vs. unfavorable employment opportunities.

Summary

In this section, contextual constraints and opportunities during the transition from university to work were considered. First, most associations found in the present study generalized across high- vs. low opportunity contexts. Thus, agency made a difference regardless of whether employment opportunities were bright or gloomy. I further discussed the limited opportunities to enter secure and high-status positions after university and the manifold opportunities for learning and growth, which appeared to be the norm for many study participants, regardless of field of study.

6.1.9 Limitations and Strengths

Finally, it is important to note some limitations of the present study. The first and foremost limitation pertains to the longitudinal design, which does not allow for causal interpretation (cf. Steyer, Gabler, von Davier, & Nachtigall, 2000). This point is important as some researchers (e.g., Karney & Bradbury, 2000) have put forth strong causal claims drawing from longitudinal data and applying latent growth curve modeling (LGM).

When introducing LGM, I already discussed the limitations of LGM, but I want to reconsider this point here using an example: Studying longitudinal associations between goal engagement and work adaptation, I was primarily interested in predicting changes in work adaptation. Both the intercept as well as the slope of goal engagement were considered as predictors. I interpreted slope-slope associations in a *theory-guided* manner as goal engagement fostering work adaptation. It is important to bear in mind that (1) again, causal interpretations are not warranted, (2) slope-slope associations may be caused by an unknown third variable, and (3) slope-slope associations may, in fact, indicate a reverse effect in that work adaptation fostered goal engagement. The actual reverse effects that emerged in the present thesis – the relations between the intercepts of work adaptation and the slopes of goal engagement – did not provide great support for the third alternative interpretation as they constituted negative

feedback loops. However, these alternative interpretations also cannot be ruled out and future research should use randomized experimental designs to examine causality.

Another statistical aspects merits consideration: Effect sizes. Following Cohen (1992), most effects in the present study ranged from small ($r = .10$) to large ($r = .50$). On the other hand, mean-level changes across time were rather small, which was, however, not surprising. It was rather remarkable that these changes occurred over the course of only one year. In terms of statistical power, with a sample size of 523 (and $\alpha = .05$, $\beta = .80$), it was possible to detect small effects ($r = .10$) in the present study (Cohen, 1992). In order to detect very small effects a larger sample size would have been needed.

Another limitation pertains to the sampling method. I did not intend to recruit a representative sample. However, in the end, the sample appeared reasonably unbiased with regard to central sociodemographic characteristics including gender, GPA, and unemployment rates.

Finally, measurement limitations need to be noted. The present study used exclusively self-report measures (cf. Schwarz, 1999), excluding implicit measures of motivation as well as archive data for objective outcomes or information from other sources such as partners. Moreover, it is well-known that self-reports of subjective well-being are affected by context effects (Schwarz & Strack, 1999). To name just one example, happiness reports differ depending on whether respondents are asked on a sunny vs. on a rainy day. However, the manifold longitudinal relations between well-being and other constructs that emerged provide evidence that context effects did not completely overshadow actual effects. In addition, although measurement properties overall were satisfactory, goal disengagement showed low internal consistency at two waves, the measurement model of goal self-concordance showed unsatisfactory fit at one wave, and positive relations did not exhibit measurement invariance across time. Two final points merit consideration: Demand effects cannot be excluded as the present study did not use a cover story – following the American Psychological Association's (2002) ethics code on deception in research. I sought to minimize demand effects using anonymous web-based data collection. Moreover, as with all longitudinal studies, reactivity effects due to repeated measurements are possible (Shadish, Cook, & Campbell, 2002). In addition, as I conducted all semi-structured interviews myself due to personnel constraints I cannot rule out interviewer effects.

However, the strengths of the study also deserve consideration. A 4-wave, nationwide, multi-cohort study as used here has many advantages over commonly used designs. The focus on four fields of study made it possible to contrast high- and low-opportunity contexts. Moreover, compared to other multi-wave longitudinal studies, the present sample size ($n =$

523) was high. Finally, this study demonstrates that longitudinal web-based studies can yield satisfactory retention rates.

Summary

The present study had some limitations. The longitudinal design of the study did not allow for causal interpretations. The LGM findings were interpreted in a theory-guided manner and alternative interpretations merit consideration. In order to detect very small effects a larger sample size would have been needed. I did not intend to recruit a representative sample, but in the end, the sample appeared reasonably unbiased. Moreover, some measurement limitations need to be noted. However, a 4-wave, nation-wide, multi-cohort study involving 523 graduates from four selected fields of study has many advantages over commonly used designs.

6.2 Where Do We Go From Here?

In the second part of this final chapter, I provide an outlook. First, I reflect on paradigmatic assumptions from life-span developmental psychology, which guided the present thesis. Second, implications of a plasticity perspective on human development are considered. Third, I offer avenues for future research on human agency drawing from the action-phase model of developmental regulation. Then, I re-consider the concepts of adaptive development and contextual sensitivity and discuss implications for future research. Some interdisciplinary links are outlined and potential applications of the present findings are presented. At the end of this final chapter, I formulate a brief conclusion.

6.2.1 Plasticity, Agency, Adaptation, and Contextual Sensitivity

Scientific research rests on paradigms (Kuhn, 1970). The present study was based on paradigmatic assumptions from life-span developmental psychology, which I would like to reconsider shortly in the following.

First, this study built on the assumption that human development is malleable (e.g., Baltes, 1987; Lerner, 1996). This does not imply that aspects of human functioning are completely in flux or that development may not be continuous. And presumably, life-span transitions such as the transition from university to work are times during which individuals are particularly prone to change. However, the plasticity perspective put forth by a life-span view of human development challenges stability claims made by others (e.g., Costa & McCrae, 1994; Lykken & Tellegen, 1996). Conceiving development as potentially malleable has important implications for applications as will be discussed below.

Second, this study investigated whether and how individuals create their own development and supported the viability of an agency perspective on human development (e.g., Baltes & Baltes, 1990; Brandtstädter, 1998; Brandtstädter & Lerner, 1999; Freund & Baltes, 2002; Heckhausen, 1999; Lerner & Busch-Rossnagel, 1981; Lerner & Walls, 1999; Nurmi & Salmela-Aro, 2006; Silbereisen et al., 1986). The theoretical cornerstone was the action-phase model of developmental regulation (Heckhausen, 1999). Agency accounts have been criticized from different perspectives. Some scholars stress the determination by structural or environmental forces (nurture) (for an overview of structuralist positions see for example Evans, 2007). Others view biology (nature) as the driving force (e.g., McGuffin et al., 2001), which culminates in positions that negate the existence of free will (e.g., Roth, 1994). I

posit that whether individuals can overcome structural constraints is not a theoretical but an empirical question and depends on the strength of these constraints. Moreover, I maintain that agency is different from free will as it is concerned with the goals individuals hold and pursue, not with the question how they arrive at these goals.

Third, this work focused on adaptive development (Seligman & Csikszentmihalyi, 2000). One lesson learned from this thesis was the importance of conceiving adaptive development as a multi-dimensional construct. An inquiry into adaptive development raises questions about the normative vs. descriptive character of psychological science, but a discussion would be beyond the scope of this thesis.

Finally, the present thesis emphasized a contextual perspective following the notion of “development as action in context” (Silbereisen et al., 1986). Some contextual parameters were especially important in the present thesis as was discussed earlier: The centrality of work goals, the differential opportunities for learning vs. status attainment, and the different employment opportunities in different fields of study. Below I discuss implications for future inquiries drawing from research on social change (e.g., Elder, 1974; Silbereisen, 2005).

6.2.2 Plasticity in Human Development

This study focused on individual change, which raises various questions for future research. First, more research is needed to understand what drove mean-level changes across the transition. I want to highlight three questions: (1) Why did status goals increase? Did processes of symbolic self-completion (Wicklund & Gollwitzer, 1982) account for these changes? (2) Why did goal disengagement decrease? Did individuals really use these strategies in response to anticipated or imaginary failure? (3) Why did purpose in life decrease? This finding, which may reflect increasing realism or disillusionment, has also emerged in other studies (Ryff & Keyes, 1995) and contradicts the maturity principle (Caspi et al., 2005).

Moreover, at a conceptual level, life-span developmental research on human plasticity may benefit from considering concepts and methods put forth by dynamic systems theories. Systems theories are a family of related theoretical approaches and concepts (e.g., synergetics, Haken, 1990; autopoiesis, Maturana & Varela, 1987), which converge in their interest in understanding the structure and dynamics of systems. Systems are defined as sets of interacting elements; and humans and their development can also be understood as systems. Systems theories originated in the natural sciences and have been applied in personality psychology (e.g., Carver & Scheier, 1998), social psychology (e.g., Nachtigall, 1998; Vallacher & Nowak, 1997), and developmental psychology (e.g., Ford & Lerner, 1992; Thelen & Smith,

1998). Various phenomena addressed in this thesis are of central interest to systems theories, such as positive and negative feedback loops and nonlinear dynamics. Future research may investigate these lines of convergence in more depth.

Finally, conceiving development as malleable has implications for applications, as will be discussed in detail below. The present study demonstrated that individuals can bring about positive changes in their development themselves, which underscores the importance of human agency.

6.2.3 Agency and the Action-Phase Model of Developmental Regulation

The present thesis built on and extended the action-phase model of developmental regulation, a theoretical framework to understand human agency across the life span (Heckhausen, 1999). A central proposition of the action-phase model also put forth in the present thesis is that context-congruency is decisive for adaptive development. In the following, I consider various avenues for future research. Some points were already discussed in the first part of this chapter and are not repeated here.

Life Goals

In this thesis, I examined learning and status goals as motivators of developmental regulation. From here, avenues for future research open up.

First, in which contexts are learning and status goals adaptive? Drawing from the action-phase model (Heckhausen, 1999) I posit that learning goals are adaptive when contexts offer opportunities for learning whereas status goals are beneficial when contexts provide opportunities for status attainment, for example when climbing up the career ladder. Investigating the contextual conditions under which intrinsic (e.g., learning) and extrinsic (e.g., status) goals – or a combination of both ³ – are adaptive may also be of interest to motivational (e.g., Heckhausen & Heckhausen, 2006), educational (e.g., Elliot & McGregor, 2001; Moller & Elliot, 2006), and organizational psychology (e.g., Locke & Latham, 2006). I suspect that opportunities for learning are present across a wide range of ecologies whereas opportunities to attain high status are constricted to a more narrow range of ecological niches, which is an important qualifier to claims made by self-determination theory on the

³ Interaction effects were also explored in the present thesis, but were not found.

maladaptiveness of extrinsic goals (e.g., Kasser, 1993). Status goals may not per se have a “dark side”, they may just be difficult to attain.

At a more specific level, we need to know more about the proximal processes behind the motivating effects of learning goals. I showed that learning goals buffered individuals from experiencing negative affect during goal pursuit. This mechanism warrants further investigation, preferably using experimental designs. For example, making learning goals salient (e.g., “What matters is that you learn something new, that you broaden your horizon, that you further your competencies”) should buffer individuals from experiencing negative affect when performing difficult tasks and should eventually foster persistence. Finally, the links between learning goals and growth mindsets (Dweck, 2006) and malleability theories (Molden & Dweck, 2006) – both have been linked to adaptation – merit investigation. Maybe learning goals serve as a mediator of these constructs on adaptive outcomes.

Goal Self-Concordance

Further questions arise when considering goal self-concordance, the second motivator behind goal engagement and goal disengagement examined here. First, in which contexts is goal self-concordance adaptive? The goal self-concordance model views goal self-concordance as uniformly adaptive (Sheldon & Elliot, 1999). However, goal self-concordance may only be adaptive when contextual opportunities for goal attainment are beneficial (Heckhausen, 1999). For example, disengaging from work goals in unfavorable contexts (cf. Tomasik, 2007) should be facilitated when individuals perceive these goals not as concordant with their self. Similarly, after menopause, women who want a child because of societal expectations should have fewer difficulties to disengage and should be better off than their counterparts for whom this goal is closely tied to their self (cf. Heckhausen et al., 2001).

Second, the proximal processes underlying the motivational effects of goal self-concordance are unclear. I presume that high congruence within the explicit motivational system (i.e., goal self-concordance) may be a marker of high congruence between explicit and implicit goals, which repeatedly has been linked to good adaptation (e.g., Brunstein et al., 1998; Hofer & Chasiotis, 2003; Kazen & Kuhl, 2005). This idea merits further investigation. Moreover, Kuhl’s PSI theory (2001) provides interesting propositions for future research. Kuhl (2001) distinguishes between two forms how individuals may influence themselves: self-control, as a “dictatorship” mode of self-influence, and self-regulation, as a “democratic” mode of self-influence. It would be interesting to examine whether low goal self-concordance

fosters dictatorship modes of self-control, which, in the long run undermine motivational resources.

A final point merits investigation. To illustrate this point I would like to refer to Shakespeare's Hamlet who is a prominent example of the struggles to put a desired goal forth into action. Haunted by the ghost of his father, Hamlet seeks revenge for his father's death, yet he cannot bring himself to carry out the murder. Is it maybe because this goal is externally imposed rather than one with which he truly identifies? One may argue that the lack of self-concordance of this goal may be one reason behind his reluctance. Arguably, individuals may well engage in malevolent goals, and they may pursue such malevolent goals most effectively when they are truly identified with them (this may, in fact, be a strong test for the theory). High self-concordance may well have a "dark side", namely, when directed at malevolent goals.

Context-Congruency: Implications for Approach vs. Avoidance Goals

The context-congruency hypothesis can also be applied to other goals. To illustrate possible avenues for future research I would like to give one example. The present thesis focused on approach goals (i.e. "want something"), but avoidance goals (i.e., "not want something") also merit consideration. Approach and avoidance goals are not two sides of the same coin, but have differential effects (e.g., Moller & Elliot, 2006). Related constructs include hope for success vs. fear of failure (see Heckhausen & Heckhausen, 2006), hoped for vs. feared possible selves (Cross & Markus, 1991), and promotion vs. prevention focus (Higgins, 1997; see for example Sassenberg, Jonas, Shah, & Brazy, 2007). Avoidance goals have often been linked to maladaptation (e.g., Moller & Elliot, 2006), but maybe because predominantly growth contexts were studied (e.g., college students). I suggest that approach goals may be more adaptive earlier in the life course when individuals experience more gains, whereas avoidance goals may be more adaptive in later adulthood when individuals experience more losses (cf. Heckhausen et al., 1989). Indeed, empirical evidence shows that individuals adjust their goals towards avoidance with increasing age (e.g., Heckhausen, 1997). In a different vein, approach goals may be more adaptive under conditions of economic growth, whereas avoidance goals may be more beneficial under conditions of economic decline.

Optimization and Adaptive Regulation

The action-phase model (Heckhausen, 1999) proposes a meta-regulatory process, optimization, which guides developmental regulation across the life span in accordance with

waxing and waning contextual opportunities. Thus, optimization may be the meta-regulatory mechanism, which regulates which life goals become salient when and which developmental goals become self-concordant when, which in turn, as shown in the present thesis, predicts goal engagement and goal disengagement. To date, empirical studies on optimization are missing, which is an important gap in the literature.

Effects of Goal Engagement and Goal Disengagement

Until now, I discussed implications for future research focusing on the predictors of goal engagement and goal disengagement. Their effects deserve equal attention.

First, in this thesis effects of goal engagement and goal disengagement were studied, but future research may consider the differential effects of the four control strategies underlying goal engagement and goal disengagement. For example, the different strategies that were summarized as disengagement strategies in this thesis may have differential effects (e.g., self-protection vs. disengagement) (cf. Silbereisen et al., 2006). Moreover, following a person-centered approach (Magnusson, 1998), one could examine whether specific clusters of control strategies are more adaptive than others.

Second, this study focused on developmental regulation in the work domain, which overlaps with other constructs suggested in career development and organizational psychology. Future research may investigate links between work-related goal engagement and constructs such as career exploration (e.g., Kracke, 2002), career maturity or readiness (e.g., Schmitt-Rodermund & Silbereisen, 1998; Super, 1990), proactivity (e.g., Ashford & Black, 1996), and employability (Fugate, Kinicki, & Ashford, 2004).

Third, the mediators of the adaptive effects of on-time goal engagement warrant investigation. As was shown, goal engagement promoted well-being. But why? Various pathways are possible: Goal engagement may promote well-being because individuals experience flow during goal pursuit (Csikszentmihalyi, 2000), or because goal engagement provides them with meaning and purpose, or because goal pursuit is socially rewarded particularly when referring to normative goals (Havighurst, 1976), or because individuals acquire skills during goal pursuit, or because they eventually progress towards their goals and attain them. The two latter pathways would call for considering work adaptation as a mediator of the effects of goal engagement on well-being. However, effects in the other direction have also been found namely, that well-being fosters success (Lyubomirsky et al., 2005). Thus, bidirectional links between work adaptation and well-being seem likely. However, where and when positive or negative feedback loops emerge is an open question.

Finally, negative affect has been found to promote both goal engagement and disengagement (cf. Nagy et al., 2005; Nesse, 2000). It is an important task for future research to spell out the conditions under which negative affect promotes goal engagement vs. disengagement. Finally, the range of outcomes should be expanded. I elaborate on this point below.

6.2.4 Re-Visiting Adaptive Development

In 2000, Seligman and Csikszentmihalyi (2000) addressed a plea to the scientific community to move towards a study of positive psychology. Developmental psychology has long been interested in the positive aspects of human life (e.g., Erikson, 1959). In this thesis, I deliberately used the term “adaptive development” to avoid some (probably unintended) associations brought about by the term “positive development”. Negative affect may also serve adaptation as was shown here and has been argued by others (e.g., Klinger, 1975; Nesse, 2000; Schulz & Heckhausen, 1997).

The present study has implications for future research. First, in my thesis, I drew from Heckhausen and Schulz (1999) who view the maximization of one’s long-term potential for primary control – the potential to bring about changes in one’s environment – as the central criterion of adaptive development. However, studying short-term effects, I considered multiple indicators of adaptation, which may be in the service of one’s long-term potential for primary control (Heckhausen & Schulz, 1999). The study demonstrated that these different indicators partly diverged from each other. Not only did well-being and work adaptation – the two focal outcomes of adaptation – show divergent associations, the constructs themselves split up into different facets (e.g., life satisfaction vs. affective states; subjective vs. psychological well-being). Moreover, divergence was observed between objective and subjective indicators of work adaptation. Arguably, well-being is important for many people. However, an exclusive focus on well-being as a highly subjective and potentially temporary aspect of adaptation warrants caution (cf. Schulz & Heckhausen, 1996).

Second, this study focused on adaptation over the course of only one year, which calls for an investigation of long-term effects. For example, few harmful effects of context-incongruent developmental regulation were revealed, but may appear in the long run (Heckhausen, 1999). Importantly, an investigation of long-term effects would enlighten what short-term outcomes of adaptation eventually foster long-term primary control.

Third, the range of outcomes considered should be expanded, for example by considering other aspects of psychological well-being proposed by Ryff (1989): Environmental

mastery, personal growth, and self-acceptance. These aspects, particularly maybe personal growth, may show closer relations to objective indicators of adaptation than the aspects considered in this thesis. Moreover, I examined positive relations in view of the high importance of relatedness needs (e.g., Baumeister & Leary, 1995; Ryan & Deci, 2000), but a closer examination would be worth a whole series of studies of its own (see for example Noack & Buhl, 2004). Besides, adaptation in other developmental domains (e.g., leisure, civic engagement, cf. Silbereisen et al., 2006) may be considered as well as – in addition to mental health – physical health and maladaptive outcomes, which raises the next point.

The present study focused on adaptive development, building on the premise that problem-free development does not equal the “good life”. This implies at the same time that adaptation may co-exist with maladaptation. Thus, maladaptive outcomes merit investigation, for example, externalizing problem behavior, such as substance use, particularly in view of the peak of substance use in emerging adulthood (Arnett, 2000), antisocial behavior, or delinquency.

6.2.5 Human Lives in Time and Place: The Role of Social Change

Development takes place in context (e.g., Baltes, 1987; Bronfenbrenner, 1979; Elder, 1974; Heckhausen, 1999; Noack, 1990; Silbereisen et al., 1986). Thus, time and place are central coordinates to consider when studying human development. This is what I attempted in this thesis. In the first part of this chapter, I focused on the high- vs. low-opportunity contexts present in different fields of study during the transition and on the difficulties to attain high-status positions and the increasing importance of learning goals. This discussion is not repeated here. In the following, I formulate implications for future research drawing from research on social change.

What is Social Change?

Not only individuals change, contexts change as well. This is reflected in the concept of social change, which refers to relatively lasting transformations of societal features, such as social structures and institutions, norms, values, cultural products, and symbols (Calhoun, 1992). Dating back to the seminal work of Elder (1974) on the children of the Great Depression, researchers have been interested in human development in times of social change (e.g., Pinquart & Silbereisen, 2004; Silbereisen, 2005; Silbereisen, Best, & Haase, 2007; Mortimer & Larson, 2002).

Decreasing External Regulation, Increasing Challenges for Human Agency

In this thesis, I showed that work is (still?) a central developmental goal. However, access to the world of work has become increasingly difficult. Youth have been referred to as “the losers in a globalizing world” (cf. Blossfeld et al., 2005) as they appear particularly vulnerable to economic deregulation. In the future, careers are assumed to become increasingly discontinuous and fragmented throughout the life course (e.g., Heinz, 2002). Individuals may increasingly experience job-to-job-transitions, transitions into and out of unemployment, or early retirement due to rising economic deregulation. Some scholars celebrate the new “Protean careers of the 21st century” (Hall, 1996) – referring to the Greek god Proteus who could change shape at will – whereas others view the new capitalism as leading to a “corrosion of character” (Sennett, 1998). Future research may investigate what enables individuals to master work-related challenges (e.g., Kanfer et al., 2001) and under which conditions individuals experience marginalization and “corrosion”. Arguably, some individuals may be better able to cope with deregulation and insecurity, a hallmark of contemporary social change in Western societies (Silbereisen et al., 2006) than others as expressed by Peter:

Interviewer: “You said before that you are not really someone who is looking for security”

Peter: “Well, maybe not. You can’t make a general statement. Maybe in comparison to my friends. There are some who say, oh, this uncertainty, I couldn’t imagine living like that. No certainty. Well exactly this free-lance position in my maybe future job, some said, oh, they couldn’t do this, this would be too uncertain for them. Well, I don’t see a problem here”

Not only has work become more deregulated, social change has also led to decreasing regulation in other domains such as family and leisure (e.g., Silbereisen et al., 2006). Thus, due to processes of social change including globalization, individualization, and pluralization (e.g., Silbereisen et al., 2006), individual agency is strongly challenged in modern societies and may become even more so (see also Brandtstädter, 2006). As not only external, but also psychological resources are limited throughout the life span, future research may examine whether, as a consequence of economic and social deregulation, individuals may increasingly experience states of “ego depletion” (Baumeister et al., 1998).

6.2.6 Interdisciplinary Links

The questions addressed in this thesis are neither new nor have they been treated only by psychologists. The “good life”, for example, has been a core issue of philosophical inquiry since the days of Socrates. Here I concentrate on some interdisciplinary links surrounding the concept of agency, which has been of wider interest in the social sciences and in philosophy.

In the social sciences, the concept of agency has received much attention in sociology, dating back to the work of scholars like Talcott Parsons (1937) on the structure of social action. Another interesting historical line traces back to Max Weber's work (1904/2004) on the Protestant ethic and the spirit of capitalism, which inspired the psychological research by McClelland (1961) on achievement motivation, which was considered in this thesis. A central theme in sociology appears to be the question how agency and social and economic structures relate to each other (for an overview see Evans, 2007). For example, Beck (1986) investigated individual agency in modern "risk societies"; Giddens (1991) discussed agency in late modernity and put forth the argument that the freedom to choose one's identity is both liberating as well as troubling; whereas Sennett (1998) has worked on the corrosion of agency due to economic constraints in contemporary societies. Agency further plays a role in the work of life-course sociologists, as for example in the work of Clausen (1991), Diewald (e.g., 2007), Elder (e.g., 1998), Heinz (e.g., 2002), and Schoon (e.g., Schoon, Martin, & Ross, 2007). Overviews on agency concepts in contemporary sociology are provided by Emirbayer and Mische (1998) and Marshall (2000). Besides sociologists, criminologists have been interested in agency. The idea has been most vigorously put forth recently by Sampson and Laub (2005) who "highlight a life-course view that emphasizes human agency and choice over the life span, underscoring how people construct their lives within the context of ongoing constraints" (p. 20).

Regarding philosophy, the historical roots of the concept of agency were already introduced earlier. Already Aristotle was interested in human agency and stated in the *Nicomachean ethics* that "...every action and pursuit is thought to aim at some good" (Book I, Ch. 1, Aristotle, 330BC/1953). In philosophy, agency has often been discussed in the context of debates around the concept of free will. Even a minimal review is beyond the scope of this thesis. I would like to outline one link to the work of Harry Frankfurt (1971), which has interesting relations to the concept of goal self-concordance treated in this thesis. Frankfurt distinguishes between first- and second-order desires and states that our will is free only when our first- and second-order desires converge. For example, a person may have the (first-order) desire to eat a whole cake of chocolate, but may be not free in her will when her (second-order) desire would be not to have this desire. Frankfurt suggests that only when individuals embrace their desires "wholeheartedly" (Frankfurt, 1988), hence, when first- and second order desires converge, they have full-blooded agency. Applying this idea to the present thesis, individuals would be viewed as agentic only when their goals are concordant with their self.

Thus, agency appears to be a concept in which various scientific disciplines share a fundamental interest. It remains an interesting task for future research to examine these interdisciplinary links thoroughly.

6.2.7 Potential Applications

Last, but certainly not least, one may think about applications of the present findings following the notion of an applied developmental science (Lerner et al., 2000).

As demonstrated in this study, none of the aspects under investigation was stable, which raises optimism regarding their malleability through prevention/promotion programs. When randomized, such programs would also provide opportunities to test for causal effects. A number of existing programs show that fostering adaptive motivation and volition indeed helps individuals to master the transition into work life. Salmela-Aro (2007) demonstrated the positive effects of intervention programs in Finland, which increased adolescents' positive motivation towards future education and decreased depression among youth at risk. The positive intervention effects were sustained over time and had positive spill-over effects to other life domains (e.g., societal engagement, social networks). SCHuuuB (Tomasik, Fabel, & Silbereisen, 2007) is another program seeking to enable individuals to navigate the transition into work life successfully, which is currently in its pilot phase and has shown encouraging results. Another school-based intervention program has proven successful in that it helped adolescents crystallize their occupational (i.e., entrepreneurial) interests (Schmitt-Rodermund & Schröder, 2004); and this may well foster adaptation in the long run. One large intervention program, the IPSY program (Weichold, Giannotta, Silbereisen, Ciairano, & Wenzel, 2006) – albeit not targeting work-related developmental regulation but general “life skills” – has shown encouraging long-term effects, not only in Germany, but also in Italy.

Many of these programs address agency processes, but some of the components identified as crucial in this thesis, have not been addressed so far. Thus, future applications may benefit from considering the motivational and volitional processes found to be adaptive in this thesis. On the one hand, programs should foster learning goals. How to nurture learning goals best remains an open question. However, considering that individuals show a natural tendency towards curiosity and exploration in order to maximize their potential for primary control (cf. Heckhausen, 2000) it may not be the question how to foster learning goals, but maybe how to avoid their deterioration (cf. Eccles et al., 1993). Moreover, programs should encourage individuals to explore (cf. Kracke, 2002) and commit to goals with which they are truly identified and from which they derive “enjoyment or stimulation”. Finally,

individuals should be encouraged to acquire and practice the regulatory skills they need for adaptive goal engagement. In order to pursue goals persistently, individuals need selective secondary and compensatory primary control strategies as a back up, which include self-motivational strategies (e.g., believing in success, keeping focused) or getting social support and identify alternatives when things go wrong (cf. Heckhausen, 1999). The motivational and volitional competencies outlined here may be fostered by various means including role plays, simulations, and also by providing information.

Moving beyond the individual level, one may also think about implications for social policy. In modern societies, processes of social change have reduced external constraints and raised the challenges for individual agency (Silbereisen et al., 2006). Societies need to think about how to capitalize on the positive implications for individual development and how to protect more vulnerable individuals from the risks associated with such deregulation. For example, one may think about how to avoid marginalization processes among individuals who are disconnected from the world of work, apparently a central life domain in contemporary societies. If societies cannot secure access to the world of work for everyone, it may be important to at least provide opportunities for and reward engagement in alternative domains (e.g., civic engagement) (cf. Tomasik, 2007). In view of the positive effects of goal reengagement (e.g., Wrosch et al., 2003; Wrosch et al., 2007), adaptive effects can be expected.

Finally, an interesting implication emerges considering the impact of lay theories about the malleability of human attributes on psychosocial adaptation. Research by Dweck and colleagues (e.g., Molden & Dweck, 2006) shows that individuals who believe in malleability show better adaptation than those who believe in stability, which illustrates the Thomas theorem: "If men define situations as real, they are real in their consequences" (Thomas & Thomas, 1928, p. 572). Communicating that development is malleable, thus, may be an important message for individuals in any promotion or intervention setting, but also for the public.

6.2.8 Conclusion

To conclude, the present study showed that individuals may indeed bring about positive changes in their development themselves. Our goals in life and the reasons why we choose to engage in specific endeavors – because we want it or because others want us to – play an important role in how we approach developmental tasks, such as mastering the transition into work. Engaging in developmental tasks when the time is right, in turn is crucial, not only for well-being, but also for objective outcomes of adaptation. As long as contextual conditions leave degrees of freedom for individual agency, it is, thus, important what we care about (Frankfurt, 1982). How to foster adaptive agency remains an exciting task for future applications.

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Appendix A: Measures

Motivational Orientations

Life Goals

How important is it for you to realize this goal in your life?

Learning Goals

- ... broaden my horizon
- ... further my competencies

Status Goals

- ... have prestigious positions
- ... have a high social status

Self-Concordance of Work Goals

I pursue this goal because somebody else wants me to or because the situation seems to compel it.

I pursue this goal because I really identify with it.

I pursue this goal because of the enjoyment or stimulation that this goal would provide me.

I pursue this goal because I would feel ashamed, guilty, or anxious if I did not have this goal.

To what extent is this goal consistent with the values which guide your life?

Work-Related OPS

Work-Related Goal Engagement

Selective Primary Control

I invest all my energy to have a good occupational future.

I engage for a successful occupational future wherever I can.

Even if it takes most of my leisure time, I do everything in order to have a good occupational future.

I work hard to have a good occupational future.

If my occupational prospects get worse, I will try even harder.

Selective Secondary Control

I take care that other things do not distract me from my goal of good occupational prospects.

I often remind myself how important it is for my whole life to have a good occupational future.

I often imagine how overjoyed I would be if I found a good job.

When I think about my occupational future I often tell myself that I will surely be successful.

Compensatory Primary Control

If my occupational future is in danger, I will seek help (e.g., from acquaintances, friends, parents).

If my occupational path is going into the wrong direction I would accept unpleasant detours.

If I cannot manage to get a good occupational future I will look for unusual or new ways to succeed at last.

If I run into trouble with my occupational prospects I will seek advice from others (e.g., from acquaintances, friends, parents).

Work-Related Goal Disengagement

Compensatory Secondary Control

If my career fails I will tell myself that other graduates also do not have good career prospects.

If I can not attain my desired career, I will tell myself that it is not my fault.

If I cannot realize my occupational plans, I will simply settle for the next best job.

If there are problems with my occupational future, I will remind myself that work is not everything in life.

Well-Being

Satisfaction with Life

In most ways my life is close to my ideal.

The conditions of my life are excellent.

I am satisfied with my life.

So far I have gotten the important things I want in life.

If I could live my life over, I would change almost nothing.

Positive and Negative Affect

*During the last week...**Positive Affect*

I was happy.

I felt hopeful about the future.

Negative Affect

I was bothered by things that usually don't bother me.

I had trouble keeping my mind on what I was doing.

I felt depressed.

I felt that everything I did was an effort.

I felt fearful.

My sleep was restless.

I felt lonely.

I could not "get going".

Psychological Well-Being

Purpose in Life

I live life one day at a time and don't really think about the future.

I tend to focus on the present, because the future nearly always brings me problems.

My daily activities often seem trivial and unimportant to me.

I don't have a good sense of what it is I'm trying to accomplish in life.

I used to set goals for myself, but that now seems like a waste of time.

I enjoy making plans for the future and working to make them a reality.

I am an active person in carrying out the plans I set for myself.

Some people wander aimlessly through life, but I am not one of them.

I sometimes feel as if I've done all there is to do in life.

Autonomy

I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people.

My decisions are not usually influenced by what everyone else is doing.

I tend to worry about what other people think of me.

Being happy with myself is more important to me than having others approve of me.

I tend to be influenced by people with strong opinions.

I have confidence in my opinions, even if they are contrary to the general consensus.

It's difficult for me to voice my own opinions on controversial matters.

I often change my mind about decisions if my friends or family disagree.

I judge myself by what I think is important, not by the values of what others think is important.

Positive Relations

Most people see me as loving and affectionate.

Maintaining close relationships has been difficult and frustrating for me.

I often feel lonely because I have few close friends with whom to share my concerns.

I enjoy personal and mutual conversations with family members or friends.

I don't have many people who want to listen when I need to talk.

It seems to me that most other people have more friends than I do.

People would describe me as a giving person, willing to share my time with others.

I have not experienced many warm and trusting relationships with others.

I know that I can trust my friends, and they know they can trust me.

Work Adaptation

Work satisfaction

How satisfied are with your current work situation?

Work-related goal progress

To what extent have you been successful so far pursuing this goal?

Employment

Are you currently gainfully employed? (Gainful employment refers to any job that pays a salary including stipends, payed internships etc.)

Income

What is your own monthly income after taxes?

Appendix B: Semi-Structured Interview

Work Domain

What is your current work situation?

Are you currently gainfully employed?

What is your current main occupation? Please describe this main occupation.

What is the exact job title?

Do you currently hold additional jobs? Please describe these.

Which career do you want in the long run?

How satisfied are you with your current work situation?

What are you satisfied with?

What are you not satisfied with?

Can you briefly describe how things have developed in the work domain since graduation?

If you think about graduation, do you still remember which work goals you had at that time?

To what extent does your current work situation match these goals?

Which work goals do you have right now?

What would you say is currently your most important work goal?

Is this goal really consistent with who you are or rather not?

Would you be overjoyed if you attained this goal or rather not?

Are there external circumstances – situations or maybe also other people – that seem to compel that you have this goal?

Would you feel bad – guilty or anxious for example – if you did not have this goal?

Partnership/Family Domain

What is your current partnership/family situation?

Do you have a partner?

If so, do you live in the same place?

What is your marital status?

Do you have children? How many?

How satisfied are you with your current partnership/family situation?

What are you satisfied with?

What are you not satisfied with?

Has anything changed in your partnership/family situation since graduation or has the situation remained stable?

If you think about graduation, do you still remember which partnership/family goals you had at that time?

To what extent does your current partnership/family situation match these goals?

Which partnership/family goals do you have right now?

What would you say is currently your most important partnership/family goal?

Is this goal really consistent with who you are or rather not?

Would you be overjoyed if you attained this goal or rather not?

Are there external circumstances – situations or maybe also other people – that seem to compel that you have this goal?

Would you feel bad – guilty or anxious for example – if you did not have this goal?

Other Life Domains

Besides work and partnership/family, there are many other domains in life, for example concerning leisure, friends, personal growth, health, society, and many more. Do you currently have important goals in such other life domains besides work and partnership/family?

How important are those different life domains, work, partnership/family, and other domains, for you at the moment?

Do you think that the importance of these life domains will change in your future?

Well-Being

The next question is a little thought experiment. Imagine someone your age would think about his or her life and would say: I am doing really well; I am thoroughly satisfied with my life. What could this person have been thinking?

What do you think is a satisfied life?

If you think about your own life right now, to what extent are you satisfied with your own life in this sense?

Would you say that your life is meaningful?

What does this mean to you?

If you think about your future and your personal development – what is important for you?

How do you want to develop?

If not mentioned: Ask about work and partnership/family.

Social Comparison

Are you still in contact with your former fellow students?

What do you think of their current work situation?

Appendix C: Intercorrelations

Table C.1
Means, Standard Deviations, and Intercorrelations at Wave 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<i>M</i>	4.58	3.09	8.93	3.76	2.88	3.43	6.83	5.21	2.91	1.69	4.75	3.92	4.75	27.16	1.70	.40
<i>SD</i>	.50	.90	2.87	.53	.63	1.23	2.56	1.08	.80	.61	.68	.66	.73	2.73	.46	.49
1 LEA	-															
2 STA	.07	-														
3 WGS	.19***	.02	-													
4 WENG	.23***	.37***	.21***	-												
5 WDIS	.05	-.22***	-.17**	-.13*	-											
6 WSA	.05	-.01	.26***	.10	-.16**	-										
7 WGP	.01	.06	.23***	.20***	-.26***	.51***	-									
8 SWL	.08	.07	.30***	.08	-.10*	.47***	.38***	-								
9 PA	.10	-.03	.29***	.10	-.15	.42***	.37***	.56***	-							
10 NA	-.06	.07	-.26***	-.00	.12*	-.26***	-.20	-.43***	.55***	-						
11 PUR	.20***	.17**	.45***	.36***	-.26***	.32***	.34***	.45***	.43***	-.37***	-					
12 AUT	.11*	-.04	.28***	.04	-.15**	.09	.14**	.24***	.30***	-.35***	.36***	-				
13 REL	.16**	-.05	.38***	.15**	-.08	.24***	.17**	.48***	.40***	-.39***	.50***	.25***	-			
14 Age	.02	-.06	.00	-.10*	.02	-.01	.02	-.08	-.01	-.00	-.03	.07	.00	-		
15 Sex	.18***	-.07	.06	.14**	.10*	-.09	-.16**	-.07	-.06	.14**	.05	-.17**	.11*	-.19***	-	
16 OPP	.13*	-.03	-.10	-.02	.24***	-.29***	-.30***	-.24***	-.28***	.14**	-.26***	-.08	-.12*	-.13**	.16***	-

Note. LEA = Learning goals. STA = Status goals. WGS = Work-related goal self-concordance. WENG = Work-related goal engagement. WDIS = Work-related goal disengagement. WSA = Work satisfaction. WGP = Work-related goal progress. SWL = Satisfaction with life. PA = Positive affect. NA = Negative Affect. PUR = Purpose in life. AUT = Autonomy. REL = Positive relations with others. OPP = Employment opportunities.

* $p < .05$ ** $p < .01$ *** $p < .001$

Table C.2
Means, Standard Deviations, and Intercorrelations at Wave 2

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<i>M</i>	4.54	3.09	8.93	3.75	2.85	3.41	7.07	.67	1232. 46	5.10	3.00	1.60	4.68	3.80	4.67	27.17	1.70	.40
<i>SD</i>	.50	.95	2.81	.53	.66	1.23	2.39	.47	835.36	1.10	.79	.56	.65	.68	.77	2.73	.46	.49
1 LEA	-																	
2 STA	.09	-																
3 WGS	.27***	.04	-															
4 WENG	.17**	.33***	.16**	-														
5. WDIS	-.11*	-.25***	-.17**	-.17**	-													
6 WSA	-.01	.13*	.25***	.15**	-.24***	-												
7 WGP	.11*	.21***	.28***	.19***	-.21***	.68***	-											
8 EMP	-.01	.07	.04	.11*	-.21***	.46***	.38***	-										
9 INC	.02	.10	.15*	.18**	-.27***	.48***	.39***	.54***	-									
10 SWL	.09	.12*	.22***	.16**	-.14**	.54***	.52***	.21***	.34***	-								
11 PA	.06	.10	.17**	.17**	-.11*	.46***	.42***	.19***	.31***	.58***	-							
12 NA	.04	.03	-.21***	-.06	.09	-.43***	-.35***	-.23***	-.21***	-.54***	-.63***	-						
13 PUR	.17**	.12*	.28***	.44***	-.15**	.28***	.31***	.24***	.26***	.36***	.37***	-.37***	-					
14 AUT	.23***	-.12*	.24***	.03	-.08	.01	.14**	-.02	-.01	.16**	.15**	-.22***	.17**	-				
15 REL	.15**	-.05	.24***	.21***	.02	.22***	.26***	.08	.15*	.46***	.41***	-.42***	.44***	.19***	-			
16 Age	.01	-.06	-.07	-.06	-.04	-.10	-.05	-.01	.09	-.02	.00	-.03	-.09	.14**	.02	-		
17 Sex	.08	-.07	.09	.13*	.12*	-.08	-.09	-.07	-.18**	-.07	-.07	.09	.07	-.13**	.09	-.19***	-	
18 OPP	.05	-.05	.02	-.05	.17**	-.28***	-.22***	-.10	-.43***	-.24***	-.24***	.17***	-.15**	.02	-.09	-.13**	.16***	-

Note. LEA = Learning goals. STA = Status goals. WGS = Work-related goal self-concordance. WENG = Work-related goal engagement. WDIS = Work-related goal disengagement. WSA = Work satisfaction. WGP = Work-related goal progress. EMP = Employment. INC = Income. SWL = Satisfaction with life. PA = Positive affect. NA = Negative Affect. PUR = Purpose in life. AUT = Autonomy. REL = Positive relations with others. OPP = Employment opportunities.

* $p < .05$ ** $p < .01$ *** $p < .001$

Table C.3
Means, Standard Deviations, and Intercorrelations at Wave 3

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
<i>M</i>	4.58	3.10	9.27	3.67	2.83	3.62	7.06	.82	1466.	5.12	3.02	1.54	4.67	3.95	4.71	27.17	1.70	.40	
<i>SD</i>	.49	.95	3.11	.54	.70	1.17	2.43	.38	790.16	1.05	.77	.51	.65	.69	.74	2.73	.46	.49	
1 LEA	-																		
2 STA	.15**	-																	
3 WGS	.25***	.10	-																
4 WENG	.27***	.45***	.25***	-															
5 WDIS	-.17**	-.22***	-.20***	-.12*	-														
6 WSA	.07	.16**	.32***	.22***	-.16**	-													
7 WGP	.04	.14**	.30***	.21***	-.17**	.64***	-												
8 EMP	.07	.06	.09	.20***	-.08	.40***	.32***	-											
9 INC	-.01	.16**	.09	.19**	-.24***	.36***	.37***	.43***	-										
10 SWL	.16**	.18**	.32***	.22***	-.11*	.55***	.40***	.11*	.25***	-									
11 PA	.11*	.15**	.30***	.12*	-.01	.41***	.35***	.01	.16**	.53***	-								
12 NA	-.14**	-.08	-.30***	-.05	.09	-.32***	-.24***	-.07	-.12*	-.49***	-.57***	-							
13 PUR	.25***	.24***	.45***	.46***	-.27***	.36***	.32***	.16**	.24***	.51***	.37***	-.39***	-						
14 AUT	.25***	.03	.29***	.11*	-.17**	.05	.09	-.02	-.01	.12*	.10	-.19***	.29***	-					
15 REL	.11*	.04	.29***	.17**	-.02	.20***	.17**	.09	.06	.40***	.36***	-.32***	.51***	.22***	-				
16 Age	-.04	-.05	.04	-.07	-.09	-.06	.09	-.02	.10	-.07	-.04	.02	-.03	.19***	.03	-			
17 Sex	.04	-.06	.07	.15**	.21***	-.08	-.03	-.03	-.17**	-.03	-.00	.12	.02	-.17**	.13*	-.19***	-		
18 OPP	.13*	-.08	.01	-.06	.08	-.18***	-.24***	-.21***	-.46***	-.18**	-.20***	.11*	-.17**	-.03	-.11*	-.13**	.16***	-	

Note. LEA = Learning goals. STA = Status goals. WGS = Work-related goal self-concordance. WENG = Work-related goal engagement. WDIS = Work-related goal disengagement. WSA = Work satisfaction. WGP = Work-related goal progress. EMP = Employment. INC = Income. SWL = Satisfaction with life. PA = Positive affect. NA = Negative Affect. PUR = Purpose in life. AUT = Autonomy. REL = Positive relations with others. OPP = Employment opportunities.

* $p < .05$ ** $p < .01$ *** $p < .001$

Table C.4
Means, Standard Deviations, and Intercorrelations at Wave 4

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
<i>M</i>	4.62	3.12	9.29	3.75	2.76	3.69	7.21	.87	1515.68	5.14	3.02	1.52	4.69	3.98	4.76	27.17	1.70	.40	
<i>SD</i>	.47	.94	2.72	.53	.70	1.07	2.30	.34	749.71	1.09	.78	.48	.67	.65	.73	2.73	.46	.49	
1 LEA	-																		
2 STA	.17**	-																	
3 WGS	.28***	.11*	-																
4 WENG	.30***	.36***	.30***	-															
5 WDIS	-.13*	-.15**	-.19***	-.16**	-														
6 WSA	.09	.12*	.27***	.21***	-.21***	-													
7 WGP	.13*	.17**	.17**	.22***	-.16**	.67***	-												
8 EMP	.03	.12*	.02	.13*	-.12*	.41***	.35***	-											
9 INC	-.04	.20***	.04	.05	-.26***	.38***	.37***	.37***	-										
10 SWL	.16**	.16**	.27***	.26***	-.15**	.57***	.44***	.22***	.33***	-									
11 PA	.08	.10*	.20***	.28***	-.10	.38***	.30***	.13*	.19**	.55***	-								
12 NA	.02	-.02	-.22***	-.15**	.11*	-.26***	-.21***	-.19***	-.12*	-.44***	-.51***	-							
13 PUR	.26***	.25***	.41***	.50***	-.26***	.37***	.38***	.17**	.23***	.51***	.46***	-.36***	-						
14 AUT	.16**	-.04	.29***	.12*	-.16**	.16**	.14**	.06	.12*	.16**	.12*	-.11*	.30***	-					
15 REL	.19***	.08	.28***	.27***	-.02	.22***	.26***	.07	.04	.45***	.35***	-.27***	.52***	.23***	-				
16 Age	-.05	-.05	-.03	-.07	-.03	.03	.11	.02	.19**	-.05	.07	-.04	-.13*	.10	-.05	-			
17 Sex	.16**	-.04	.15*	.11*	.15**	.01	-.07	-.03	-.24**	-.04	.00	.07	.06	-.18**	.11*	-.19***	-		
18 OPP	.04	-.10	.04	-.01	.10*	-.17**	-.23***	-.23***	-.53***	-.19***	-.15**	.05	-.17**	-.02	-.06	-.13**	.16***	-	

Note. LEA = Learning goals. STA = Status goals. WGS = Work-related goal self-concordance. WENG = Work-related goal engagement. WDIS = Work-related goal disengagement. WSA = Work satisfaction. WGP = Work-related goal progress. EMP = Employment. INC = Income. SWL = Satisfaction with life. PA = Positive affect. NA = Negative Affect. PUR = Purpose in life. AUT = Autonomy. REL = Positive relations with others. OPP = Employment opportunities.

* $p < .05$ ** $p < .01$ *** $p < .001$

Appendix D: Validity Analyses

Motivational Orientations

Learning and Status Goals

I examined associations between learning and status goals and other life goals, which were also drawn from the GOALS questionnaire (Pöhlmann & Brunstein, 1997). These goals referred to *altruism* (e.g., “help others in need”), *intimacy* (e.g., “have an intimate relationship”), *affiliation* (e.g., “have a large social network”), and *diversity* (e.g., “have an exciting life”). All four life goals showed satisfactory internal consistencies ($.73 < a < .86$) and small to medium-sized intercorrelations.

As shown in Table D.1, learning goals showed positive associations with altruism, intimacy, and diversity goals. Status goals were not associated with altruism and intimacy goals, but small positive correlations were found with diversity goals. This can be explained drawing from Pöhlmann and Brunstein (1997) who conceptualized learning, status, and diversity all as agency goals. Finally, both learning and status goals showed small positive relations to affiliation goals. In sum, these findings provided hints on the discriminant validity of learning and status goals. Moreover, they supported the viability of conceiving learning, altruism, and intimacy as intrinsic life goals (cf. Kasser & Ryan, 1996; Klusmann et al., 2005),

Self-Concordance of Work Goals

With regard to the self-concordance of work goals, I sought to establish discriminant validity and examined relations to *perceived control* (“To what extent do you feel you are in control of this goal?”) and *social support* (“To what extent do others support you pursuing this goal?”) in the work domain. Both these items were drawn from Little (1983). As shown in Table D.2, goal self-concordance showed positive, but rather small correlations with both aspects.

Table D.1

Learning, Status and Other Life Goals: Intercorrelations

	Wave	Altruism	Intimacy	Affiliation	Diversity
Learning	1	.26***	.20***	.19***	.24***
	2	.19***	.15**	.16**	.24***
	3	.14**	.14**	.08	.19***
	4	.14**	.27***	.20***	.21***
Status	1	.08	.08	.11*	.15***
	2	.06	.01	.14**	.21***
	3	-.04	.06	.11*	.15**
	4	.04	.09	.15*	.18**

Note.

* $p < .05$ ** $p < .01$ *** $p < .001$

Table D.2

Self-Concordance and Other Properties of Work Goals: Intercorrelations

	Wave	Social support	Perceived control
Self-concordance	1	.28***	.25***
	2	.21***	.25***
	3	.23***	.37***
	4	.29***	.26***

Note. All aspects refer to work goals.

*** $p < .001$

Work-Related OPS

Associations with Work-Related Behavioral Intentions

First, relations between work-related OPS and behavioral intentions were analyzed. These behavioral intentions were based on Schneller and Schneider (2005) and included *downward job mobility* (“get a job for which I am over-qualified”), *horizontal job mobility* (“get a job from another occupational field”), *lowering income expectations* (“lower my income expectations”), *relocation* (“relocate”), *self-employment* (“become self-employed”), and attainment of *additional qualifications* (“attain additional qualifications”). Each behavioral intention was measured by one item on a 5-point scale (1 = strongly disagree; 5 = strongly agree) at wave 2, 3, and 4.

As shown in Table D.3, participants with higher work-related goal engagement were more willing to relocate and to attain additional qualifications. In contrast, graduates with higher work-related goal disengagement indicated higher willingness for downward job mobility, horizontal job mobility, and lowering income expectations. They were not more willing to relocate or to attain additional qualifications. On the contrary, some small negative correlations emerged between work-related goal disengagement and these intentions. Thus, participants with higher goal engagement were more likely to report proactive intentions in order to improve their work situation. In contrast, goal disengagement was linked to intentions to switch to other occupational fields or to downgrade occupational aspirations and income expectations.

Table D.3

Work-Related OPS and Behavioral Intentions: Intercorrelations

	Wave	Down- ward job mobi- lity	Hori- zontal job mobi- lity	Lower income expec- tations	Re- location	Self- employ- ment	Addi- tional qualifi- cations
Work goal engagement	2	-.01	-.03	.12*	.20***	.18**	.33***
	3	.12*	.03	.11*	.24***	.09	.32***
	4	.04	.03	.05	.29***	.05	.33***
Work goal disengagement	2	.32***	.20***	.15**	-.04	.02	-.11*
	3	.26***	.22***	.20***	-.09	-.06	-.03
	4	.31***	.28***	.22***	-.15**	-.01	-.11*

Note.

* $p < .05$ ** $p < .01$ *** $p < .001$

Table D.4

Work-Related OPS and Goal Adjustment: Intercorrelations

	Wave	Goal disengagement	Goal reengagement
Work goal engagement	2	-.16**	.20***
	4	-.13*	.29***
Work goal disengagement	2	.13*	.12*
	4	.19***	.09

Note.

* $p < .05$ ** $p < .01$ *** $p < .001$

Associations with Goal Adjustment

Second, I examined associations between work-related OPS and goal adjustment. Goal adjustment reflects a global personality disposition and consists of two components, goal disengagement and goal reengagement (Wrosch et al., 2003). Both facets were measured on a 5-point scale by four (goal disengagement; e.g., “If I have to stop pursuing an important goal in my life it’s easy for me to stop thinking about the goal and let it go”) and six (goal reengagement; e.g., “If I have to stop pursuing an important goal in my life I start working on other new goals.”) items, respectively. Goal adjustment was measured at wave 2 and 4.

Prior to the present study, I translated the original English scale into German. The German translation was checked back by Carsten Wrosch who developed the English scale and is a native German speaker. I pre-tested the scale in an independent sample of undergraduate students ($n = 94$; 88.3% female; median age = 23). The German scale exhibited the same two-factor structure as the original English version and the two factors – goal disengagement and goal reengagement – showed high internal consistency.

In the present study, both subscales showed high internal consistency with Cronbach’s alphas ranging between $a = .82$ and $a = .87$. The two components showed medium to high intercorrelations of $r = .39$ at wave 2 and $r = .44$ at wave 4. This mirrored correlations reported by Wrosch et al. (2003) (Study 2: $r = .34$, $p < .01$, for young adults) and found in my own pilot study ($r = .39$, $p < .001$).

Again, a differential pattern of associations emerged (see Table D.4). Work-related goal engagement was negatively related to goal disengagement and positively to goal reengagement. In contrast, work-related goal disengagement was positively associated with both facets of goal adjustment, although the correlation with goal reengagement did not reach significance at wave 4.

Well-Being

Finally, I investigated correlates of the central well-being measures with additional indicators of well-being. First, relations to *self-esteem* were examined. Drawing from Robins et al. (2001), global self-esteem was assessed at wave 2, 3, and 4 by one item (“I have high self-esteem”) with answers ranging from (1) strongly disagree to (5) strongly agree. Robins et al. (2001) demonstrated the reliability and validity of this single-item measure as well as strong convergences with the Rosenberg self-esteem scale. These authors have suggested this single-item measure of self-esteem as “a practical alternative” (p. 151) to the Rosenberg scale.

Second, associations with *self-esteem* were analyzed. Self-efficacy was measured by the General Perceived Self-Efficacy Scale (Schwarzer, 2007), which consists of ten items with answers ranging from (1) strongly disagree to (5) strongly agree (e.g., “I can usually handle whatever comes my way”). Self-efficacy was measured at wave 3 and showed high internal consistency ($a = .86$).

Third, links to transition-related affect were analyzed. At wave 1, participants indicated their positive and negative affect regarding the transition after university. *Positive affect* (e.g., “This transition brings me joy”) and *negative affect* (e.g., “This transition scares me”) were measured by two items each. The items were answered on a 5-point scale (1 = strongly disagree; 5 = strongly agree). Positive ($a = .90$) and negative ($a = .85$) affect were highly homogeneous and showed a substantial negative correlation ($r = -.55$, $p < .001$).

Correlations between central and additional indicators of well-being are portrayed in Table D.5. As expected, satisfaction with life, positive and negative affect, purpose in life, autonomy, and positive relations showed considerable but not overly high correlations with the additional well-being indicators. This supported the discriminant validity of these measures.

Table D.5
Central and Additional Indicators of Well-Being: Intercorrelations

	Wave	Self-esteem	Self-efficacy	Transition-related positive affect	Transition-related negative affect
Satisfaction with life	1			.43***	-.47***
	2	.47***			
	3	.50***	.49***		
	4	.46***			
Positive affect	1			.52***	-.54***
	2	.41***			
	3	.42***	.41***		
	4	.38***			
Negative affect	1			-.29***	.49***
	2	-.44***			
	3	-.44***	-.41***		
	4	-.35***			
Purpose in life	1			.41***	-.45***
	2	.38***			
	3	.47***	.49***		
	4	.47***			
Autonomy	1			.26***	-.37***
	2	.34***			
	3	.41***	.45***		
	4	.36***			
Positive relations	1			.22***	.35***
	2	.40***			
	3	.39***	.42***		
	4	.34***			

Note.

*** $p < .001$

Zusammenfassung

(Summary)

Agency und adaptive Entwicklung am Übergang vom Studium in den Beruf: Eine Längsschnittstudie

(Wie) können Menschen ihre eigene Entwicklung adaptiv gestalten? Diese Frage war der Ausgangspunkt meiner Dissertation, in der ich mich mit Entwicklungsgestaltung (Agency) und adaptiver Entwicklung am Übergang vom Studium in den Beruf beschäftigte.

Die Idee, dass Menschen bestrebt sind, ihre eigene Entwicklung selbst zu gestalten, reicht zurück bis in die Antike und wurde bereits von Aristoteles (330 BC/1953) behandelt. In der Psychologie beschäftigen sich heute verschiedene Subdisziplinen mit diesem Thema, darunter die Entwicklungspsychologie. Ein Modell, um zu verstehen, wie Menschen auf ihre Entwicklung Einfluss nehmen, ist das Handlungsphasenmodell der Entwicklungsregulation (Heckhausen, 1999), welches den theoretischen Hintergrund meiner Arbeit bildete. Über die Lebensspanne hinweg wählen Menschen bestimmte Entwicklungsziele, engagieren sich für diese Ziele und lösen sich gegebenenfalls wieder von ihnen. Das Handlungsphasenmodell beschreibt diese Prozesse des Engagements und des Ablösens. Wichtig ist dabei die Idee der adaptiven Passung zwischen individueller Regulation und kontextuellen Möglichkeiten.

Vier Ziele waren für meine Arbeit zentral. Ich wollte verstehen, (1) wie Menschen sich am Übergang vom Studium in den Beruf verändern, (2) welche Rolle sie selbst dabei spielen diese Veränderungen anzustoßen, (3) welcher Art diese Veränderungen sind – mich interessierten nicht problematische sondern vielmehr adaptive Entwicklungsverläufe – und (4) ob diese Prozesse ähnlich oder unterschiedlich ablaufen, je nachdem ob sich Menschen in günstigen oder ungünstigen Entwicklungskontexten (siehe Silbereisen et al., 1986) befinden. Dazu wurden eine Reihe spezifischer Hypothesen formuliert.

Zur empirischen Prüfung dieser Hypothesen führte ich eine webbasierte Längsschnittstudie durch. Die Stichprobe, die als relativ repräsentativ angesehen werden kann, bestand aus 523 Hochschulabsolventen aus Deutschland, die das erste Mal zu Studienabschluss sowie vier Monate, acht Monate und zwölf Monate nach Abschluss befragt wurden. Die Absolventen kamen aus vier ausgewählten Fächern mit günstigen (Medizin, Psychologie) und ungünstigen (Architektur, Magisterabschluss) beruflichen Aussichten. Zur

statistischen Auswertung der Längsschnittdaten nutzte ich Latent Growth Curve Modeling (z. B. Singer & Willett, 2003). Zusätzlich wurden Interviews mit 15 zufällig ausgewählten Absolventen ein Jahr nach Studienabschluss durchgeführt. Diese Interviews wurden in der Diskussion zur Illustration verschiedener Befunde der Längsschnittstudie genutzt. Dabei ergaben sich interessante Konvergenzen zwischen quantitativen und qualitativen Ergebnissen.

Die Ergebnisse der Studie zeigen, dass sich Menschen während des Übergangs vom Studium in den Beruf in der Tat veränderten. Dabei folgten sie zum einen individuellen Verläufen; in einigen Aspekten gab es auch allgemeine Entwicklungstrends. So nahm das Wohlbefinden im Durchschnitt über die Zeit zu, um nur ein Beispiel zu nennen. Diese Befunde zeigen, dass die Persönlichkeit im Erwachsenenalter nicht „fest wie Beton“ ist oder dass sich Menschen in ihrem Wohlbefinden kaum verändern, wie manchmal behauptet (z. B. Costa & McCrae, 1994; Lykken & Tellegen, 1996).

Weiterhin weisen die Ergebnisse darauf hin, dass Menschen selbst eine Rolle im Hinblick darauf spielen, wie sie sich verändern. So spielten Lebensziele eine wichtige Rolle für Veränderungen im beruflichen Engagement. Während Lernziele (z. B. „Fähigkeiten weiterentwickeln“) positive Veränderungen im Engagement für berufliche Ziele vorhersagten, hatten Statusziele (z. B. „hoher sozialer Status“) keine solche motivierende Funktion. Darüber hinaus waren die Gründe aus denen sich Menschen für ihre beruflichen Ziele engagierten, wichtig. Wenn Menschen Ziele hatten, die eher mit dem eigenen Selbst übereinstimmten, mit Lust und Stimulation verbunden waren und weniger aus situationalen Zwängen heraus gewählt wurden, motivierte dies positive Veränderungen im Engagement für diese Ziele. Diese Zusammenhänge fanden sich sowohl in günstigen als auch in ungünstigen Entwicklungskontexten.

Schließlich stellt sich die Frage, ob berufliches Zielengagement wirklich adaptiv war; und tatsächlich zeigte sich eine Reihe adaptiver Effekte. Im Einzelnen sagte berufliches Engagement positive Veränderungen in der Lebenszufriedenheit, im positiven Affekt, wahrgenommenen Sinn im Leben und auch in positiven Beziehungen vorher. Was beruflichen Erfolg anging, so zeigten sich positive Beziehungen zwischen beruflichem Zielengagement und dem späterem Beschäftigungsstatus sowie der wahrgenommenen Annäherung an berufliche Ziele. All diese Effekte waren wieder unabhängig von beruflichen Aussichten, bis auf eine Ausnahme: Bei ungünstigen beruflichen Aussichten brachte das Engagement für berufliche Ziele auch Gefühle von Traurigkeit, Frustration und Angst mit sich, neben Gefühlen von Glück und Hoffnung.

Die Arbeit erbrachte eine Fülle weiterer Einblicke, zum Beispiel in die Antezedentien und Effekte von Zielablösungsprozessen. Während Zielablösung adaptiv ist, wenn es um unerreichbare Ziele geht, wie eine Reihe von Studien beeindruckend zeigen (z. B. Heckhausen et al., 2001), war dies während des Übergangs in den Beruf – berufliche Ziele waren „on-time“ und erreichbar – nicht der Fall. Weiterhin zeigten sich eine Reihe bidirektionaler Effekte, die ich mit Rückgriff auf die Theorie der symbolischen Selbstergänzung (Wicklund & Gollwitzer, 1982) und dynamische Systemtheorien (z. B. Carver & Scheier, 1998) interpretierte. Außerdem ergaben sich Einblicke in Zusammenhänge zwischen Wohlbefinden und beruflichem Erfolg: So war zum Beispiel wer mehr verdiente nicht unbedingt zufriedener mit seinem Leben oder glücklicher im Alltag (siehe Kahneman et al., 2006).

Schließlich sollen Grenzen der vorliegenden Studie benannt werden. Am wichtigsten ist hier das längsschnittliche Korrelationsdesign, welches keine kausalen Aussagen erlaubt. Kausalbeziehungen mittels randomisierter Experimente zu testen, ist eine Aufgabe für zukünftige Forschung. Daneben ergeben sich weitere Fragen für zukünftige Studien, die im letzten Kapitel der Arbeit diskutiert werden. Außerdem sind die interdisziplinären Bezüge der Arbeit interessant. Und schließlich kann man, dem Verständnis einer angewandten Entwicklungswissenschaft folgend (z. B. Lerner et al., 2000), mögliche Anwendungen für die Praxis formulieren. Man könnte zum Beispiel an Anwendungen in Berufsberatung und -rehabilitation aber auch an die Förderung adaptiver Entwicklungsgestaltung an Lebensübergängen im allgemeinen denken. Geht man über Implikationen auf der individuellen Ebene hinaus, dann stellt sich die Frage, wie Gesellschaften im sozialen Wandel mit zunehmender Deregulierung, nicht nur im ökonomischen Bereich, umgehen, die neben größeren Möglichkeiten für einige auch immer Risiken für andere mit sich bringen, die über weniger Ressourcen verfügen.

Zusammenfassend weisen die Ergebnisse dieser Arbeit darauf hin, dass Menschen adaptive Veränderungen in ihrer Entwicklung selbst hervorbringen können. Dabei spielen Ziele eine bedeutsame Rolle: Es ist wichtig, was uns wichtig ist.

Ehrenwörtliche Erklärung

(Certification of Authorship)

Durch meine Unterschrift versichere ich

1. dass mir die geltende Promotionsordnung der Fakultät für Sozial- und Verhaltenswissenschaften der Friedrich-Schiller-Universität Jena bekannt ist,
2. dass ich die Dissertation selbst angefertigt, insbesondere die Hilfe eines Promotionsberaters nicht in Anspruch genommen, sowie alle von mir benutzten Hilfsmittel und Quellen in meiner Arbeit angegeben habe,
3. dass Lysann Gebauer, Patricia Hinner und Anke Matthes mich als studentische Hilfskräfte im Projekt *Ansichten, Zufriedenheit und Richtungen nach dem Studium* unterstützt haben, außer mir aber niemand an der Auswahl und Auswertung des Materials sowie an der Herstellung des Manuskripts beteiligt war,
4. dass Dritte weder unmittelbar noch mittelbar geldwerte Leistungen von mir für Arbeiten erhalten haben, die im Zusammenhang mit dem Inhalt der vorgelegten Dissertation stehen,
5. dass ich die vorgelegte Arbeit noch nicht als Prüfungsarbeit für eine staatliche oder andere wissenschaftliche Prüfung eingereicht habe,
6. dass ich nicht die gleiche, eine in wesentlichen Teilen ähnliche oder eine andere Abhandlung bei einer anderen Hochschule bzw. anderen Fakultät als Dissertation eingereicht habe und
7. dass ich nach bestem Wissen die reine Wahrheit gesagt und nichts verschwiegen habe.

Jena, den 11. Oktober 2007

Curriculum Vitae

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Research Interests

Agency, developmental regulation, autonomy, decision-making, well-being, social change

Education

- 2003 Diplom (equivalent to M.Sc.), University of Jena
 Diploma thesis: “Urgent Goal Striving in the Transition from School to Work”
 (Advisors: Jutta Heckhausen, Rainer K. Silbereisen)
 (Grade 1.0, equivalent to 4.0 GPA)
- 2000 Vordiplom (equivalent to B.Sc.), University of Jena
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- 1997 Abitur (college entrance certificate), Gymnasium Dresden-Plauen
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Professional Experiences

- since 2004 University of Jena, Center for Applied Developmental Science and SFB 580,
 Research associate
 Project “Individual and Social Resources for Coping with Social Change:
 Development and Psychosocial Effects” (PI: Rainer K. Silbereisen)
- 2002/03/06 University of California, Irvine, Research stages
 Project “Transition to Adulthood in Germany” (PI: Jutta Heckhausen, Olaf
 Köller); Project “Transition to Adulthood in the United States” (PI: Jutta
 Heckhausen, Ellen Greenberger, Chuansheng Chen, C. David Dooley)
- 2001 Max Planck Institute for Human Development, Berlin, Research stage
 Project “Life-Span Development: Selective Optimization with Compensation”
 (PI: Paul B. Baltes, Alexandra M. Freund, Ralf Krampe)
- 2000-2001 University of Jena, Research assistant
 Project “Motivation and Biographies of Xenophobic Violent Offenders” (PI:
 Wolfgang Frindte, Jörg Neumann)

 Fellowships and Stipends

2004-2007	German National Academic Foundation (Studienstiftung), Dissertation fellowship
2007	Jacobs Foundation, Marbach Conference, Invited young scholar
2006	German National Academic Foundation (Studienstiftung), Travel stipend
2005	German Research Foundation (DFG), Travel stipend
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2002/2003	German National Academic Foundation (Studienstiftung), Research stipends
1999-2003	German National Academic Foundation (Studienstiftung), Student fellowship

 Publications

- Haase, C. M., Tomasik, M. J., & Silbereisen, R. K. (under revision). Correlates of premature behavioral autonomy in late adolescence and young adulthood. *European Psychologist*.
- Haase, C. M., Heckhausen, J., & Köller, O. (in press). Goal engagement during the school-to-work transition: Beneficial for all, particularly for girls. *Journal of Research on Adolescence*.
- Haase, C. M., Silbereisen, R. K., & Reitzle, M. (in press). Adolescents' transitions to behavioral autonomy after German unification. *Journal of Adolescence*.
- Silbereisen, R. K., Best, H., & Haase, C. M. (Eds.). (2007). Agency and human development in times of social change [Special Section]. *International Journal of Psychology, 42*, 73-115.
- Silbereisen, R. K., Best, H., & Haase, C. M. (2007). Editorial: Agency and human development in times of social change. *International Journal of Psychology, 42*, 73-76.
- Poulin, M., Haase, C. M., & Heckhausen, J. (2005). Engagement and disengagement across the life span: An analysis of two-process models of developmental regulation. In W. Greve, K. Rothermund, & D. Wentura (Eds.), *The adaptive self: Personal continuity and intentional self-development* (pp. 117-135). Göttingen/New York: Hogrefe.
- Neumann, J., Eschler, S., Knotte, A., Haase, C. M., Hieber, K., Müller, C., Soremski, R., Ulrich, S., & Wiezorek, C. (2002). Prävention und Intervention. In W. Frindte & J. Neumann (Eds.), *Fremdenfeindliche Gewalttäter. Biographien und Tatverläufe* [Xenophobic violent offenders. Biographies and courses of offenses] (pp. 209-251). Opladen, Germany: Westdeutscher Verlag.

 Presentations

- Heckhausen, J., Carmody, C., Haase, C. M., & Poulin, M. J. (2008, July). Positive and negative affect as resource and information for goal engagement and disengagement. In R. M. Nesse (Chair), *Evolution, motivation and mood*. Symposium conducted at the quadrennial International Congress of Psychology, Berlin, Germany.
- Haase, C. M. (2007, August). Life goals, control striving, and positive development during the transition from college to work. In J. Heckhausen (Chair), *Agency in the Transition from School to Work and College*. Invited symposium conducted at the annual European Conference for Developmental Psychology, Jena, Germany.
- Haase, C. M., Heckhausen, J., Poulin, M., & Chang, E. S. (2007, April). *Individual control striving and adaptive development in noncollege-bound youth during the school-to-work transition: Findings from two longitudinal studies in Germany and the US*. Poster presented at the Jacobs Foundation Conference on the Transition from School to Work, Marbach, Germany.
- Haase, C. M., & Heckhausen, J. (2006, September). Zielengagement bei einem gelungenen Übergang von der Schule in den Beruf [Goal engagement during an adaptive transition from school to work]. In Bärbel Kracke & Alexander Grob (Chairs), *Psycho-soziale*

- Ressourcen Jugendlicher im Übergang von der Schule in die Berufsausbildung.* Symposium conducted at the biennial meeting of the German Psychological Society, Nuremberg, Germany.
- Silbereisen, R. K., Haase, C. M., & Tomasik, M. J. (2006, July). Short-term and long-term correlates of premature behavioral autonomy. In Bame Nsamenang (Chair), *Lessons and challenges from research and its applications with adolescents in different contexts of the globe.* Symposium conducted at the biennial meeting of the International Society for the Study of Behavioural Development, Melbourne, Australia.
- Haase, C. M., Silbereisen, R. K., & Reitzle, M. (2006, March). Transitions to behavioral autonomy and financial independence after German reunification. In Rainer K. Silbereisen (Chair), *Social and political change in adolescent development.* Invited symposium conducted at the biennial meeting of the Society for Research on Adolescence, San Francisco, CA.
- Haase, C. M., & Heckhausen, J. (2006, March). *Achievement – not power, affiliation, money – motivation spurs goal engagement and control before the school-to-work transition.* Poster presented at the biennial meeting of the Society for Research on Adolescence, San Francisco, CA.
- Fröhlich, C., Haase, C. M., & Silbereisen, R. K. (2006, March). *Affective influences on risk decision making in adolescence and young adulthood.* Poster presented at the biennial meeting of the Society for Research on Adolescence, San Francisco, CA.
- Haase, C. M., & Heckhausen, J. (2005, April). *Primary and secondary control strategies are adaptive during the school-to-work transition. General and gender-specific processes.* Poster presented at the biennial meeting of the Society for Research in Child Development, Atlanta, GA.
- Haase, C. M. (2004, October). *Agency in the transition from university to work.* Poster presented at the first conference of the Center for Applied Developmental Science, Weimar, Germany.
- Haase, C. M., Heckhausen, J., & Köller, O. (2003, July). *Urgent goal striving in the transition from school to vocational education.* Poster presented at the European Conference for Psychology, Vienna, Austria.
- Heckhausen, J., Nagy, G., Tomasik, M. J., Haase, C. M., & Köller, O. (2002, June). *Motivation and control in the transition from school to work.* Presented at the annual meeting of the American Psychological Society, New Orleans, LA.

Professional Societies

- since 2006 European Association for Research on Adolescence, Student member
 since 2006 Deutsche Gesellschaft für Psychologie, Associate member

Academic Activities

- 2007 University of Jena, Local Organizing Committee
 13th European Conference on Developmental Psychology
- 2007 Marbach Conference on the Transition from School to Work, Rapporteur
- 2006 University of Jena, Co-organizer
 Workshop series “Studies in Developmental Science”
- 2005 University of Jena, Co-organizer
 Workshop “Agency and Human Development under Conditions of Social Change”

Teaching Experiences

- 2006 Emotion Regulation across the Life Span (part-time replacement for Rainer K. Silbereisen)
Undergraduate seminar
- 2006 Development of the Self in Adolescence
Undergraduate seminar
- 2005-2006 Developmental Regulation in Adulthood
Undergraduate seminar
- 2004-2005 Affective Influences on Decision-Making in Adolescence and Young Adulthood (Co-Instructors: Rainer K. Silbereisen, Cornelia Fröhlich)
Graduate study project embedded in the DAAD exchange with Pennsylvania State University

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