INTRODUCTION

What we want in life and how we go about attaining our goals, is one of the forces driving development across the lifespan (e.g., P. B. Baltes & Baltes, 1990; Brandtstädter, 1999; Freund & Riediger, in press; J. Heckhausen, 1999). Within biological and social constraints—and in interaction with them—our personal goals shape who we become, what environments we select and how well we are doing. Lifespan developmental psychology holds that, throughout the lifespan, the ratio of gains to losses in internal and external resources becomes more and more unfavorable. Adapting to these changes in resources, lifespan theory posits that a general orientation toward gains in younger age groups shifts to an orientation toward maintaining resources and avoiding losses in older adulthood (e.g., P. B. Baltes, 1997; Brandtstädter, 1998; Freund & Baltes, 2000; J. Heckhausen, 1999; Staudinger, Marsiske, & Baltes, 1995). This shift should also be apparent in the formulation of personal goals. Are there age-related differences in the orientation of personal goals toward growth, maintenance, and prevention of losses?

"*To learn a foreign language*", "*to improve physical functioning*", or "*to get a high school degree*" are typical future plans mentioned by 20-year-olds. When asked about their future goals, 70-year-olds typically wish "*to stay healthy*", "*to continue to live happily with their partner*", or "*to avoid moving into an old people's home*". These goals differ not only in terms of the life domains but also with respect to their outcome orientation. Logically, one could argue that framing goals as being oriented toward positive and desired outcomes (e.g., "*I want to improve my health*") or the prevention of negative and undesired outcomes (e.g., "*I do not want to become sick*") is symmetrical as both goals refer to the same goal domain, namely health (cf. Freund, 2002; Freund & Ebner, in press). Reviewing the literature on approach–avoidance motivation, however, quite consistently suggests that in early adulthood, the motivational orientation toward striving for gains, opposed to preventing losses, is predominant (Elliot, Sheldon, & Church, 1997; Emmons, 1996). Furthermore, for younger adults approach motivation is not only more salient than avoidance motivation, but it is also more functional with respect to motivation, task performance, and subjective well-being (Coats, Janoff-Bulman, & Alpert, 1996; Elliot & Sheldon, 1997; Roney, Higgins, & Shah, 1995). Approaching gains, then, appears to be adaptive for younger adults. As older adults face an increasingly less positive balance of gains to losses, however, orienting one's goals toward maintaining the status quo and avoiding losses might be more adaptive for high levels of functioning and well-being in old age. The central question, then, is if primary goal orientation toward approaching positive outcomes is only present and adaptive in younger adults but does not hold for older adults.

Why should this be the case? Younger adults, whose lives loom largely ahead of them, may have high expectations and hopes for the future. They experience more gains than losses

and have broad access to various resources. They are in a favorable condition for enhancing their situation and attaining growth-oriented goals. In order to improve and build up their potentials, they may primarily strive toward maximizing their knowledge and acquiring new skills. Under less favorable conditions, when the person is confronted with losses in goal-relevant means or when life events bring about expectation and experience of decline, such as is typically the case when people grow older, the motivational focus may shift from approaching positive outcomes toward trying to maintain the status quo and avoid further decline (cf. P. B. Baltes, 1987, 1997; J. Heckhausen, Dixon, & Baltes, 1989; Staudinger et al., 1995).

The present dissertation addresses the question if age-related changes in objectively experienced and subjectively perceived external and internal resources throughout life are reflected in the selection of personal goals. Furthermore, it examines if the motivational shift in goal orientation from focusing on gains toward maintenance and prevention of loss over the lifespan constitutes one mechanism of adaptive developmental regulation.

Very few studies have investigated age-related changes in personal goal orientation. To my knowledge, no study so far has tested for age-related differences in the associations between goal orientation and subjective well-being and thus explored its role for successful developmental adaptation. The present dissertation tries to fill this gap by approaching the concept of goal orientation from a developmental perspective. The proposed developmental conceptualization of personal goal orientation comprises three dimensions, namely *growth*, *maintenance*, and *prevention of loss*, as these are three general functions of development (P. B. Baltes, Lindenberger, & Staudinger, 1998; Staudinger et al., 1995). By doing so, the present studies join theories and empirical evidence of two lines of research, namely lifespan developmental psychology and action theory. This allows to investigate the role of personal goals for development as well as to examine how personal goals change over the lifespan. Linking these two research traditions leads to new research questions that are of relevance both for the motivational and the developmental literature.

Specifically, the present research examines age-related differences in goal orientation, age-differential relations between goal orientation and subjective well-being, and the role of expected resource demands of goals as an underlying factor of age-group differences in goal orientation. As personal goals can be expressed on the level of self-report as well as in goal selection behavior, the present dissertation adopts a multi-method approach to obtain converging evidence on age-related differences in personal goal orientation across four studies that use independent samples of younger and older adults, different types of measurement (i.e., self-report and preference-choice behavior), as well as different life contexts (i.e., goals relating to self-generated goal domains, cognitive and physical functioning goals).

The dissertation is structured as follows: First, the theoretical part presents the overarching theoretical considerations leading to my central research questions and the general research design. Then, the empirical part subsequently reports each of the four studies conducted. This includes introducing specific research hypotheses, describing methods and results, and summarizing and briefly discussing the findings. The general discussion links the central findings of all four studies to the question whether and how younger and older adults balance developmental gains and losses over the lifespan and, by doing so, successfully influence their developmental trajectories. It outlines strengths and limitations of the present work, gives an outlook on future research directions, and ends with a conclusion of this dissertation.

THEORETICAL BACKGROUND

This chapter begins with the idea that lifespan development is characterized by both developmental gains *and* losses and that the ratio of gains to losses with respect to subjective perceptions as well as objective experiences of internal and external resources becomes less positive throughout life. It gives examples of lifespan trajectories for the specific domains of cognitive and physical functioning. Then, by integrating lifespan developmental and action perspectives, I discuss the conceptualization of life-long development as a flexible and adaptive person–environment interaction. In this context, the role of age-graded, normative history-graded, and non-normative factors as interacting forces and the role of developmental tasks for development are highlighted. Conceptualizing personal goals as being, in parts, based on and in accordance with developmental tasks, the description of individuals as active constructors of their lives within biological, social, and psychological opportunities and constraints follows. In this sense, I argue that goal-related resources, goals, and goal-directed actions play an important role in development and active life-management.

To define adaptive development and its underlying processes, the concept of subjective well-being and the *SOC-Theory* as a general model for understanding adaptive developmental regulation as well as two additional models of successful aging are introduced. These models specify goal selection and goal pursuit as fundamental regulatory processes in that they help to balance developmental gains and losses in accordance with external and internal resources. Together, these theories provide the theoretical framework of the present dissertation, with its specific focus on one facet of personal goals, namely personal goal orientation.

Using lifespan psychology as an integrative framework, the concept of personal goal orientation can be regarded as a general meta-orientation of developmental trajectories in the sense of a general subjective theory about developmental change that refer to different functional domains and may in parts influence personal development. In the present context, however, I specifically define it as one characteristic of personal goals that is dynamic and can change across life. After briefly reviewing the historical genesis and a selection of current theories and research on approach–avoidance motivation and its various levels of representation, I develop a rationale for the present studies' developmental conceptualization of goal orientation. I then propose a shift in goal orientation from growth to maintenance and prevention of loss over the lifespan as one way to adaptively balance the increasingly negative lifespan changes related to resource gains and losses. A discussion of potentially underlying mechanisms and empirical evidence on the age-related shift in personal goal orientation and its age-differential impact on well-being follows. The chapter ends with a summary of the central research questions and predictions of the present dissertation studies.

Lifespan Development Is Characterized by Gains and Losses

Human organisms quantitatively and qualitatively change from birth to death at multiple levels of functioning. Lifespan developmental psychology studies these change processes that extend across the entire life course (cf. P. B. Baltes, Reese, & Lipsitt, 1980). It describes development as a complex phenomenon that is not uniform across domains of functioning and across time but rather conceived as a multidimensional and multifunctional dynamic (P. B. Baltes, 1987, 1997). That means, different parts of the developing system develop at different rates, in different directions, for different purposes, and may show continuities as well as discontinuities.

The idea of multidimensionality of development implies that change is not equal across all life domains, but can be different as a function of specific life contexts such as cognitive and physical functioning or different functional components. Multifunctionality implies that one and the same developmental change can serve multiple purposes and can have positive and negative consequences at the same time. Thus, for all phases of life, transformations and developmental processes are conceptualized as simultaneously comprising gains *and* losses in various functional domains (e.g., P. B. Baltes, 1987, 1997; Brandtstädter & Wentura, 1995; Labouvie-Vief, 1980, 1982). That is, the process of development is not characterized by a simple movement toward growth, improvement, or gain. Rather, throughout life, development always implies the joint occurrence of gains (growth) *and* losses (decline). The gains and losses refer to the availability of adaptive capacity as well as efficient and beneficial use of resources. Any developmental change comprises new adaptive capacity and, at the same time, loss of previously existing functions. During the same developmental period, some systems of behavior may show increase, whereas others exhibit decrease in level of functioning (P. B. Baltes, 1987). Furthermore, improvement, specialization, or an increased level of functioning in one domain can imply the loss of unchosen options and the cost of having insufficient resources left to invest into alternatives (Freund, Li, & Baltes, 1999).

How are developmental gains and losses defined? Dixon (2000) describes gains as movements from lower to higher states of functioning, and losses as movements from higher to lower functional levels. Similarly, Uttal and Perlmutter (1989) define gains as the acquisition of new functions, improvements in the effectiveness or efficiency of old structures, or the new application of existing functions to novel tasks or domains. Losses they define as the removal or disappearance of existing structures, or decrements in the effectiveness or efficiency of old functions.

Developmental change can be evaluated as gain as well as loss and criteria of what constitutes a gain and what a loss can be of subjective and objective nature (P. B. Baltes, 1987, 1997). In addition to varieties of positive (gain) and negative changes (loss), development

involves periods of constancy or stabilization (Dixon, 2000). Maintenance and stability are characterized by no change or alteration in levels of functioning. Under these assumptions, development across life can be described as multidirectional (P. B. Baltes, 1987, 1997; Brandtstädter & Wentura, 1995; Labouvie-Vief, 1981), as being oriented toward *growth* (i.e., improvement of levels of functioning or adaptive capacity), *maintenance* of functional levels, and *prevention of losses* in the face of challenge and loss (P. B. Baltes et al., 1998; Staudinger, Marsiske, & Baltes, 1993; Staudinger et al., 1995). Growth, maintenance, and prevention of loss constitute three general functions of development. They can also constitute meta-orientations of developmental change that reflect actual change as well as subjective expectations about lifespan trajectories.

The present studies were based on these theoretical propositions and the definitions of developmental gains and losses. They applied them to the process of goal selection as one means for active life management. Thus, in the context of this dissertation, personal goal orientation was specified as one characteristic of personal goals and was defined as comprising the three characteristic dimensions *growth*, *maintenance*, and *prevention of loss*. As the question on the relations between gains and losses is still unsolved (cf. Uttal & Perlmutter, 1989), these three orientations were conceptualized as independent dimensions. This allowed exploration of their interrelatedness.

The Ratio of Gains to Losses Changes Across the Lifespan: Subjective Beliefs About Developmental Change and Objective Developmental Change

The view of development as characterized by gains and losses, of course, does not imply that the occurrence of gains and losses is of equal strength in all phases of life. Based on theoretical considerations and empirical evidence across a wide spectrum of functions, systematic age-related changes in the proportion of gains to losses are proposed (e.g., P. B. Baltes, 1987). Until young adulthood, gains outweigh losses and resources are primarily allocated to growth. With advancing age, however, the actual as well as the expected ratio becomes less favorable with losses outweighing gains. Thus, later adult development is characterized by an increasingly less positive ratio of gains to losses. Rather, more and more resources are directed toward maintenance and management of loss (P. B. Baltes, 1987, 1997; P. B. Baltes & Smith, 2003; J. Heckhausen et al., 1989; Staudinger et al., 1995). Such a characterization of the lifespan, of course, is an oversimplification, because individual, functional, contextual, and historical differences need to be taken into account. This lifespan script is rather about relative probability and prevalence. Figure 1 presents this hypothesized age-related shift from gains to losses over the lifespan.

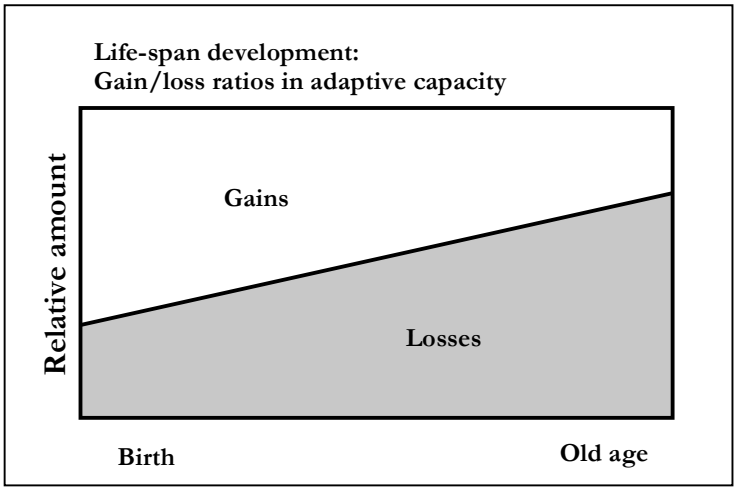

Figure 1. Proposed average course of gain–loss ratios across the lifespan (after P. B. Baltes, 1987)

J. Heckhausen et al. (J. Heckhausen et al., 1989; J. Heckhausen & Krueger, 1993) conducted research on laypersons' beliefs about gains and losses associated with aging. J. Heckhausen et al. (1989) presented a series of 350 adjectives describing personality, social, and cognitive characteristics to younger and older adults. These adjectives either referred to desirable, undesirable, or neutral characteristics. Participants were asked to rate each adjective with respect to its desirability (i.e., gain or loss relation), controllability, and sensitivity for developmental change. Respondents indicated expected onset age (i.e., age at which the increase starts) and closing age (i.e., age at which the increase ends) on a scale of adult ages from 20 to 90 years. The data showed high social consensus that there are more gains than losses in childhood, adolescence, and early adulthood. Middle-aged and late adulthood, in contrast, were expected to signal the onset of a larger number of undesirable traits (e.g., rigidity) and loss of desirable ones (e.g., extraversion). Changes in late adulthood were associated with losses in controllability, reduced potential to recover, and increased constraints on the possibilities of adopting alternative life pathways or compensatory measures. These findings are in accord with studies about the aging stereotype that document negative attitudes toward old age and aging (e.g., Green, 1981; Hummert, Garstka, O'Brien, Greenwald, & Mellot, 2002; Kite & Johnson, 1988). They are also in line with data assessed in the context of the Midlife in the United States (MIDUS) national survey that show, for example, that physical health ratings become more negative over the midlife period, ranging from 25–74 years of age, in a relatively steady way (Cleary, Zaborski, & Ayanian, 2004). There is also an increase in self-assessed mental health problems and problems with intermediate activities of daily living (i.e., functional status) with age.

These findings suggest that subjective theories about lifespan changes that can be understood as meta-orientations of developmental trajectories reflect theoretical propositions

about age-related changes in the ratio of developmental gains to losses. As will be reported later, different from the study by J. Heckhausen et al. (1989) that assessed general beliefs about developmental change in the sense of a lifespan meta-script, the present dissertation measured motivational orientation toward growth, maintenance, and prevention of loss with respect to personal goals. In this sense, it operationalized the concept goal-specifically.

In addition to age-graded expectations, however, actual changes in resources as well as the efficient and adaptive resource allocation mirror the changing proportion of gains to losses across life (cf. P. B. Baltes & Smith, 2003).[1] What are these experiences of gains and losses in resources and resource-related processes that occur throughout adulthood, and especially when growing old and very old? In the following section I elaborate on these age-related changes in resources. I focus on developmental trajectories of cognitive and physical functioning over the life course, as these are the two life contexts under specific investigation in my dissertation.

Lifespan Trajectories of Cognitive and Physical Functioning

Age-related changes are well documented for the domains of cognitive and physical functioning (for an overview, see Freund & Riediger, 2001). When distinguishing intellectual abilities in terms of the mechanics (e.g., processing speed, memory) and pragmatics of cognition (e.g., wisdom, skill-specific expertise; P. B. Baltes, 1987; P. B. Baltes et al., 1998; P. B. Baltes et al., 1999), empirical evidence documents that the cognitive mechanics show a pattern of rapid growth from infancy and childhood to adolescence. This is then followed by a monotonic and roughly linear decline during adulthood, and a further acceleration of decline in very old age (Case, 1985; Kail, 1991; Kail & Salthouse, 1994; Lindenberger & Reischies, 1999; Schaie, 1994, 1996). Moreover, cognitive training research provides evidence for decrease in cognitive potentials and severe impairment of learning abilities (e.g., Singer, Lindenberger, & Baltes, 2003). The negative development is also reflected in pathological changes in old age such as the steep increase in the prevalence of dementias with age (Cooper, 1997; Helmchen, Baltes, Geiselmann, Kanowski, Linden, Reischies et al., 1999).

Different from the mechanics, pragmatic abilities show more favorable lifespan trajectories. Cognitive pragmatics remain stable or even increase well until relatively late in life, and only then decrease. The acceleration of this decline is less pronounced than with respect to cognitive mechanics (P. B. Baltes, Staudinger, Maercker, & Smith, 1995; Bosman & Charness, 1996; Charness, 1981; Clayton & Birren, 1980; Sternberg, 1990). It is assumed that the mechanics and pragmatics conjointly influence cognitive performance in all age groups (P. B.

[1] As defined in greater detail later, resources refer to biological-genetic, social-cultural, and psychological characteristics. They can serve as developmental opportunities and constraints in that they constitute actual and potential means for goal achievement (Freund & Riediger, 2001; Navon, 1984).

Baltes, 1987; P. B. Baltes et al., 1998; P. B. Baltes et al., 1999) and, at least up to a certain point, the decrements in mechanic abilities can be compensated by culturally determined, knowledge-based cognitive pragmatics (e.g., Charness, 1981; Salthouse, 1984).

In addition to age-related changes in cognitive functions, aging is also characterized by physical decline. Various physiological and health-related decrements occur and lead to progressive functional and structural changes in most tissues and organs (for overviews, see Aiken, 1989; Krauss Whitbourne, 1985, 2001; Medina, 1996). Examples are changes in body shape and stature, increased stiffness in the joints, general slowing, and insecurity while walking as well as changes in appearance such as whitening hair or aging skin. Moreover, impairments in the functioning of the sense organs (e.g., the vestibular senses, vision, hearing, and taste) accompany aging. As the various systems interact, age-associated changes in one component can negatively influence other components (cf. Steinhagen-Thiessen, Gerok, & Borchelt, 1994). There are several negative consequences of these physical changes: Older adults show, for example, impaired biological resilience in challenging situations, lessened ability to physiologically adapt to environmental changes, and, very importantly, increased susceptibility to acute and chronic diseases such as cardiovascular diseases, arthritis, hearing, visual, or orthopedic impairments (Aiken, 1989; Steinhagen-Thiessen et al., 1994).

Taken together, aging is associated with various negative changes in biological, sensory, and cognitive functions. As P. B. Baltes and Smith (2003) review, physical and cognitive dysfunctionality and psychological mortality increases on various levels. Furthermore, considering multiple indicators, research on the self, personality, and emotion-regulation also reveals loss in functioning (Smith & Baltes, 1997). It becomes, for example, more likely that significant sources of emotional and instrumental support such as through parents, partners, relatives, or friends are lost.

Old age, however, is not only characterized by losses. In a comprehensive overview of empirical evidence on losses and potentials for gains throughout late life, P. B. Baltes and Smith (2003) distinguish between the third (i.e., young-old, up to age 80 or 85 years) and the fourth age (i.e., old-old, 80 to 85 years and older; M. M. Baltes, 1998; P. B. Baltes, 1997; P. B. Baltes & Smith, 1999; Laslett, 1991; Neugarten, 1974). Whereas the fourth age is characterized by dysfunctionality and dramatic increase in resource losses, the third age can be described in terms of potentials for resource gains *and* losses.

Best evidence of positive potentials or stability in young-old age comes from longitudinal or intervention studies in which individuals are exposed to extensive practice, better health conditions, or favorable life circumstances associated with work and leisure. This research indicates that people can maintain their level of intellectual performance until late in life (P. B.

Baltes & Willis, 1982; Schaie, 1996). Moreover, older adults show stability with respect to language-based competence (Singer, Verhaeghen, Ghisletta, Lindenberger, & Baltes, 2003). There is even potential for new learning into old age (P. B. Baltes, Staudinger, & Lindenberger, 1999; Stern & Carstensen, 2000; Willis, 1996), especially in areas that involve culture such as language, expertise, and experience (i.e., cognitive pragmatics) rather than basic brain functions (Marsiske & Willis, 1998).

In addition to longitudinal evidence on cognitive reserve capacities of the aging mind, there are a number of functional domains such as emotion-regulation, wisdom, and self-regulatory processes (e.g., coping, control, possible selves) that manifest resilience in terms of stability or even increase in late life (P. B. Baltes et al., 1998; Staudinger et al., 1995). Older adults are at the top of all age groups in emotional intelligence (i.e., understanding causes of emotions and developing strategies to avoid or solve emotional conflict situations) and wisdom (P. B. Baltes & Staudinger, 2000; Carstensen, 1998; Labouvie-Vief, 1999; Sternberg, 1990). One illustration of positive changes in self-regulatory mechanisms is older adults' ability to regulate the subjective impact of health-related losses to a self-serving level. Whereas objective health status declines dramatically with age, subjective estimates of health do not necessarily (Borchelt, Gilberg, Horgas, & Geiselmann, 1999).

Although age-associated cognitive and physical changes do exist and are to some degree unavoidable, they represent no uniform biological process. The kind and magnitude of age-related changes vary greatly from individual to individual and across functional domains. They are in part determined by psychological, environmental, and lifestyle factors and, thus, particularly in young old age, temporarily and within boundaries, modifiable and not entirely uncontrollable (Fries, 1990; Rowe & Kahn, 1987). Training studies showed that the trajectory of loss in some functional components in late life can be counteracted by specific training programs (P. B. Baltes, Sowarka, & Kliegl, 1989; P. B. Baltes & Willis, 1982; Hayslip, 1989; Kliegl, Smith, & Baltes, 1990; Schaie & Willis, 1986; Verhaegen, Marcoen, & Goossens, 1992). These training gains, however, are highly task-specific. Transfer to related abilities or generalization to everyday functioning is unlikely (P. B. Baltes, Dittmann-Kohli, & Kliegl, 1986; P. B. Baltes & Lindenberger, 1988) and the amount of plasticity (i.e., the range of potential change) in the cognitive mechanics, for example, clearly decreases with advancing age (e.g., P. B. Baltes & Kliegl, 1992; Singer, 2000).

To summarize, old age, like any other phase in life, comprises both gains *and* losses. Whereas younger age is primarily characterized by large numbers of positive changes, later life, and especially very old age, is strongly associated with functional decline. At the same time, there is potential for maintenance and even improvement or growth until old age in some

components. As a whole, lifespan development proceeds within the constraints created by this gain–loss dynamic of resources. It varies in the different life context, with some domains showing more prototypical decline trajectories (e.g., cognitive and physical functioning) than others (e.g., social relationships, emotion regulation).

Drawing upon theoretical suggestions by P. B. Baltes (1987, 1997) and Staudinger et al. (1995) as well as empirical findings by J. Heckhausen et al. (1989), the present research took subjective beliefs about developmental change over the lifespan and negative age-related changes in resources as the starting point when arguing for a motivational shift from personal goal orientation toward growth to maintenance and prevention of loss over the lifespan. The dissertation referred to the specific domains of cognitive and physical functioning in order to examine age-group differences in goal orientation in life contexts that show prototypical age-related decrease, but at the same time offer potentials for improvement or stability. In addition, it examined various central life contexts to explore domains in which the age-related differences in goal orientation do not exist, as the domains are not characterized primarily by resource losses but also offer gains and improvement until late in life.

Reviewing the evidence on lifespan trajectories in the domains of cognitive and physical functioning and discussing the potential for stability and growth through lifestyle factors and training already suggests that development is characterized by two main forces that shape lifespan changes, namely biology and culture. The following sections present the idea of development as a flexible and adaptational person–environment interaction. By doing so, it aims at an integration of lifespan developmental and action perspectives as this is crucial for understanding human development over the life course.

Integrating Lifespan Development and Action Perspectives: Development as Flexible and Adaptational Person–Environment Interaction

Lifespan psychology generally agrees that development is a life-long process of flexible adaptation to changes in opportunities and constraints on biological, social, and psychological levels (Brandtstädter & Lerner, 1999). It is a product of a complex, reciprocal interaction between biological-genetic influences and individuals' various environmental contexts during a given historical period (lifespan contextualism; P. B. Baltes et al., 1980; P. B. Baltes et al., 1998; Bronfenbrenner, 1988; Lerner & Busch-Rossnagel, 1981). Thus, in developmental adaptation, changes in the bio-genetics and environment play a crucial role. As individuals, however, are in constant interaction with their social and physical environments, reactive as well as proactive changes within themselves as well as with respect to their actions need to be considered. Persons' resource generation and investment and their actions (i.e., selection and pursuit of

personal goals) are key elements of development and the flexible, adaptational person–environment interplay. Before presenting this idea of active life-management, I further elaborate on the idea of lifespan contextualism.

Normative Age-Graded, Normative History-Graded, and Non-Normative Interacting Developmental Forces and the Concept of Developmental Tasks

To describe development as a life-long, interactive, and adaptational process between the individual and the environment has two implications: First, individuals exist in contexts that create and define possibilities and limiting boundaries for individual pathways. And second, individuals select and create their own contexts and, thus, can play an active part in shaping their lives. This section refers to the first. It introduces the three interacting developmental forces and the concept of developmental tasks that individuals are confronted with at different points in their lives and that strongly shape their life trajectories (cf. P. B. Baltes, Cornelius, & Nesselroade, 1979; Brandtstädter, 1990; Havighurst, 1956).

Lifespan contextualism refers to the idea that three classes of influences structure biological and environmental contexts, namely *normative age-graded* (ontogenetic), *normative history-graded* (evolutionary), and *non-normative* (idiosyncratic) *influences* (cf. P. B. Baltes et al., 1980). These three factors are closely interwined and do not operate independently from each other. Their cummulative effect is mediated through the developing individual and institutional structures. And they produce regularities as well as individual differences in life pathways (cf. P. B. Baltes & Smith, 2004).

Normative age-graded influences are based on biological-genetic and environmental factors. Examples for biological-genetic factors are genetic predisposition for diseases or biological maturation. They are highly correlated with chronological age, with peak expressions in early childhood and old age (P. B. Baltes, 1987). They are fairly predictable in their temporal sequence (i.e., onset, duration) and are, for the most part, similar in their direction among individuals. Examples for environmental factors are social structures that define age norms for certain events or transitions (e.g., marriage, transition from school to work) and construe age-graded opportunity structures (J. Heckhausen, 1999; Neugarten, Moore, & Lowe, 1965; Settersten & Hagestad, 1996a, 1996b). Normative age-graded influences are reflected in the amount of resources and reinforcement a society provides for a person to pursue particular developmental paths at certain ages. As they, for example, indicate to a person at what age he or she has easy access to resources relevant for specific goals, they direct development in a highly age-dependent and universal way, favoring selection, pursuit, and attainment of age-normative goals (Freund, 1997; Nurmi, 1992). In this sense, age norms and age-graded opportunity

structures suggest an agenda of "normal" development. A deviation from these norms can be evaluated as negative or positive with effects on further development. Goals that deviate from age norms, and are "off-time" rather than "on-time", are often more difficult to realize (J. Heckhausen, 1999; Neugarten, 1968; Wrosch & Heckhausen, 1999). An example is the goal to marry in late rather than early adulthood.

Normative historical influences are a function of a particular historical period. They are biological and environmental determinants that affect the lives of most, if not all, members of a specific cohort. As individual ontogenesis happens in a historical context, single events such as a political movement or a natural catastrophe or long-term societal changes such as technological advances can influence a person's opportunity structures and expectations about what is appropriate at a certain point in time.

Non-normative influences, finally, refer to idiosyncratic factors. They are biological and environmental determinants that do not happen to everyone. They are independent of normative age-graded or societal changes and do not happen at a predictable time. That is, their occurrence, patterning, and sequencing are not applicable to many individuals, nor are they clearly tied to a dimension of developmental time, wether ontogenetic or historical. Non-normative forces are rather characterized by individual uniqueness as well as diversity between people's developmental paths. Accidents or chance encounters with specific people and situations are examples (e.g., Bandura, 1982).

Both, non-normative as well as history-graded factors are expected to gain in prominence over the life course (P. B. Baltes et al., 1980). Wrosch and Freund (2001) argue that coping with non-normative factors requires self-regulatory processes to a higher degree than when dealing with normative influences. This is due to the fact that they are not as normatively regulated and there is no normative response structure.

The concept of *developmental tasks* as suggested by Havighurst (1956) derives from the interplay between normative age-graded, normative history-graded, and non-normative influences. Developmental tasks are social expectations, themes, problems, challenges, or life-adjustment situations of a person at a certain age. They develop through the interaction of biological, social, and personal external and internal influences. Some tasks arise mainly from physical maturation such as learning to walk. Other tasks arise primarily from the cultural pressure of society upon the individual such as learning to participate as a socially responsible citizen in society. The third source of developmental tasks are personal values and aspirations of the individual, which are part of his or her personality or self. Some of these tasks are age-graded and continue throughout life. Others are unique to restricted age segments or

developmental settings, and still others emerge as salient tasks at certain points in life with little reference to earlier events.

According to Havighurst (1972, 1973), the contents of some developmental tasks change over the life course. In early adulthood, as the time of special sensitivity and readiness of a person to learn, the themes refer to career and family such as starting a family and rearing children, learning to live with a partner, and getting started in an occupation. In old age, they reevolve around health and the experiences of decline and loss such as the adjustment to decreasing physical strength, to retirement and reduced income, and to death of a spouse. These examples show that developmental tasks focus the individual on specific life domains. Age-related changes in the most typical developmental tasks, however, reflect not only a shift in most salient life context, but also a shift from focusing on improvement and achievement of positive outcomes to regulation of loss, a facet that was of special interest for my dissertation.

As Freund and Baltes (in press) summarize, developmental tasks influence individual lifespan development on four levels: (1) on the level of social expectations and norms, in influencing institutional opportunity structures and social reinforcement and supporting age-appropriate goal selection and pursuit; (2) on the level of individual expectations with respect to what goals are most appropriate for a certain age; (3) on the level of personal goals by influencing age-appropriate goal domains and goal standards; and finally (4) on the level of unconscious processes of comparison that lead to positive or negative evaluation of the self and others with respect to age-related, social expectations. Thus, developmental tasks can be understood as organizing principles of lifespan changes. They provide comparison standards and, as they constitute socially shared expectations that can be internalized by the individual, they can strongly influence and structure individual goal selection and pursuit. Nurmi (1992) argues:

> "*These tasks play an important role in setting personal goals, because they provide a basis for anticipating what is possible, acceptable, and desirable at different ages.*" (p. 490)

In this sense, developmental tasks provide a frame of reference for personal development in defining the context for opportunity structures and limitations as well as determining the optimal age to set, pursue, and achieve certain goals in life and thus impact on the level of development (Freund, 1997; J. Heckhausen, 1999; Wrosch & Heckhausen, 1999). The selection and pursuit of personal goals that are age-appropriate and in accordance with developmental tasks can in itself be seen as a developmental task.

Taken together, both forces, biology and culture, influence the interaction between normative age-graded, normative history-graded, and non-normative developmental influences (P. B. Baltes, 1997; P. B. Baltes et al., 1980). Their joint influence, mediated by the developing

individual, accounts for the nature of lifespan development, for its regularity, and also for its differential properties in terms of interindividual differences, multidirectionality, multidimensionality, and multifunctionality. All three factors interact in structuring, directing, and limiting development such as through determining the tasks individuals are confronted with at different ages. These developmental tasks influence which personal goals are selected and pursued in certain phases of the lifespan. Life-long development involves the mastery of successive tasks in a series of contexts. And development can be described as successful when developmental tasks are well solved. Thus, age-graded, history-graded, and non-normative lifespan contexts as well as the concept of developmental tasks are integrative themes for understanding the nature of lifespan development.

The proposition of contextualism makes explicit the lack of full predictability of human development as well as the boundedness that individuals experience as they engage in efforts to construct and manage their lives (e.g., Brandtstädter & Lerner, 1999). At the same time, it offers new possiblities to understanding lifespan development by allowing to integrate lifespan developmental and action perspectives.

Within developmental constraints defined by the three interacting developmental influences and developmental tasks, humans can be seen as active, self-organizing "forces" in the process of managing their development. Assuming that human behavior results from a dynamic interaction of biology, culture, and the individual, it is necessary to consider regulatory processes located within the person to fully understand development (P. B. Baltes, 1997; Brandtstädter, 1990; Freund & Baltes, in press; J. Heckhausen, 1999; Lerner & Busch-Rossnagel, 1981; Magnusson, 1996). That is, in addition to describing and understanding effects of biological and environmental changes on individual life trajectories, considering ways in which individuals actively and intentionally shape their lives is fruitful. Several authors accentuated the role of resources in this active mastering of development throughout life (e.g., Brandtstädter, 1998, 1999; Freund & Baltes, 2000). Investing resources into the selection and the pursuit of personal goals is one way of influencing one's life path. The next section discusses this idea of active life-management as the interplay of goal-related resources, goals, goal-directed actions, and development.

Active Life-Management—Resources, Goals, Actions, and Development

The idea that individual life trajectories are not entirely controlled by external biological or environmental forces, but that individuals themselves can actively take part in creating, shaping, and directing their development is widely accepted (Brandtstädter & Lerner, 1999; Ford, 1987; Lerner, 1991; Lerner & Busch-Rossnagel, 1981; Klinger, 1977).[2] Ford (1987) describes human beings as complex, self-directed systems characterized by self-organization and self-construction, and as being constantly in interaction with their environment. Thoits (1994) uses the term "psychological activists" to characterize the human potential to intentionally regulate behavior and consciously direct development. One way to actively exert influence on the direction of one's life course is by self-regulatory processes such as setting and pursuing personal goals through resource investment (Boesch, 1991; Brandtstädter, 1998, 1999; Freund & Baltes, 2000). Drawing upon the concept of developmental tasks, setting and pursing age-appropriate personal goals can be understood as one way to master developmental tasks. As goal selection and pursuit are defined within a system of resource-related opportunities and constraints that change on ontogenetic, age-graded, and historical dimensions, both processes underlie continuous developmental adjustment. I elaborate on this continuous interchange in presenting the concepts of resources and personal goals as well as the processes of goal selection, goal pursuit, and goal disengagement.

The Concept of Resources

The literature offers several models and definitions of resources (for an overview, see Hobfoll, 2002). Hobfoll (2002), for instance, approaches the concept of resources from research on stress and coping. He defines resources on a broad level as entities (e.g., objects, personal characteristics, conditions, or energies) that are either centrally valued in their own right (such as self-esteem or health) or act as means to obtain centrally valued ends (such as money or social support). Only those entities are included that constitute shared positive evaluations across people holding similar cultural traditions. Resources are internal or external, distal or proximal to the self, and biological or cultural. Hobfoll's definition of resources, however, does not allow specification of the processes or outcomes that resources relate to.

E. Diener and Fujita (1995) put forward a comparably general conceptualization of resources. In their person-based approach, they define resources as broad categories encompassing material, social, or personal characteristics of an individual. A person can use

[2] The idea that individuals shape their own life course is not new. It can be traced back to ancient philosophy (for a historical overview, see Brandtstädter, 1998).

these resources to make progress toward his or her goals. For the present research, it is interesting to note that the authors relate resources to personal goals in that they suggest that different types and amounts of resources are relevant for obtaining different goals. Furthermore, they link resources to the concept of subjective well-being. It is not the resources in themselves, however, that are correlated with well-being but rather their facilitation of goal attainment (E. Diener & Fujita, 1995; Emmons, 1986). A study reported by E. Diener and Fujita (1995) provides empirical support for this assumption. College students rated how relevant 21 different resources (abilities, traits, social support, and material possessions) were for each of 15 self-generated goals. Knowledgeable informants provided information on the extent to which each participant possessed the different resources. Participants reported higher general well-being, life satisfaction, and pleasant affect, and lower negative affect the higher the congruence between selected goals and availability of adequate goal-related resources.

Conceptualizing cognitive resources, Navon (1984) draws an important distinction in that he clearly disentangles resources from processes that are related to resource usage. In this vein, he distinguishes between "commodities" and "alterants". Commodities (e.g., time, money) constitute a quantitatively finite and depletable input that is necessary for cognitive processing. At any time point commodities can be used for one purpose and by one user only. Alterants (e.g., emotional states, personality traits), by contrast, refer to psychological states that can be used simultaneously for a variety of purposes and processes. Alterants affect the efficiency of using different commodities.

The present research drew upon this distinction as proposed by Navon (1984) and, additionally, relied on a definition of resources suggested by Freund and Riediger (2001). Adopting a developmental perspective, Freund and Riediger apply the distinction raised by Navon to the context of personal goal selection and pursuit. They define resources as finite and depletable commodities that serve as constraints, that is, limitations as well as opportunities, for development. In constituting actual and potential means for goal achievement that can be invested into selecting and pursuing goals, resources are always defined in relation to specific goals and goal domains. Resources comprise biological-genetic, social-cultural, and psychological characteristics. Possession of resources in itself does not explain goal attainment. To understand effects of resources on goal achievement one needs to consider how resources are beneficially and efficiently invested. This conceptualization of resources strictly excludes processes related to resource management or psychological states (e.g., emotions, self-esteem) that might influence resource usage. It avoids potential circularity, in that it allows differentiation between resources (e.g., effort), their management (e.g., coping), and outcomes (e.g., personal well-being). Freund and Riediger argue that commodities are finite throughout

the lifespan. Alterants, in contrast, are not finite or depletable and can therefore neither be spent nor preserved. They might even increase after repeated successful usage.

In sum, the Freund and Riediger (2001) definition of resources was highly appropriate for the present research as it relates resources to specific personal goals and goal contexts. It allows the differential investigation of the importance of possessing goal-relevant means as compared to their beneficent and efficient use. Finally, it suggests that the amount and availability of resources and their specific use change across the lifespan, as discussed in more detail later.

The present dissertation measured resources and resource-related information objectively (e.g., cognitive or physical task performance) as well as subjectively (e.g., subjective availability of goal-specific resources and expectation of goal-specific resource demands). To examine the role of resources to explain age-related differences in personal goal orientation the dissertation focused on the two specific life domains of cognitive and physical functioning as these are characterized by prototypical lifespan changes with respect to resources.

In the context of the various definitions of resources, Hobfoll (2002) distinguishes between four major social and psychological resource models. Key resource models propose the existence of key resources such as dispositional optimism or self-efficacy (e.g., Bandura, 1997; Scheier & Carver, 1985). Multiple-component resource models postulate resource constructs as simultaneously comprising multiple, interconnecting components. Examples are the *Theory of Sense of Coherence* (Antonovsky, 1979) or *Personality Hardiness* (Kobasa, 1979; Kobasa & Puccetti, 1983). Integrated resource models such as the *Transactional Stress Model* (Lazarus & Folkman, 1984) or *Conservation of Resources Theory* (*COR*; Hobfoll, 1989, 1998) view resources as part of a greater dynamic process associated with well-being through the general use of resources. Finally, lifespan resource models approach the concept with respect to age-related changes in people's resource reservoirs and relations to physical health and psychological well-being. Examples are the *Model of Selection, Optimization, and Compensation* (*SOC-Model*; P. B. Baltes & Baltes, 1990), the *Dual-Process Model of Assimilative and Accommodative Coping* (Brandtstädter & Renner, 1990), or the *Model of Optimization in Primary and Secondary Control* (*OPS-Model*; J. Heckhausen & Schulz, 1995). The present research approach to resources and resource-demanding processes was in the tradition of these three lifespan theories on active and successful life-management through resource generation and adaptive allocation of resources. Theoretical propositions and empirical evidence on all three models are presented later.

The Concept of Personal Goals

Personal goals refer to states that people desire or fear and therefore want to achieve, maintain, or avoid (Emmons, 1996). That is, personal goals represent pleasant, desired consequences to be

attained or maintained and unpleasant, undesired consequences to be avoided. They are cognitive representations of states or outcomes that can be realized through investment of goal-related resources and engagement in goal-directed actions. As outlined above, when conceptualizing personal goals in a lifespan developmental context, they can be seen as motivated by developmental tasks.

Psychological research on personal goal constructs has increased within the last two decades (for overviews, see Austin & Vancouver, 1996; Brunstein & Maier, 1996; Emmons, 1997; Gollwitzer & Bargh, 1996; Palys & Little, 1983; Pervin, 1989). One reason for this rise in interest in goal constructs is based on the proposition by psychological action theory that actions and their structuring in terms of goals and goal-related means instead of sensations or behaviors constitute the basic unit of human behavior and development (Boesch, 1991; Brandtstädter & Lerner, 1999; Eckensberger, 2001; James, 1890/1904). The basic assumption of action theory is that human beings interpret their own and others' behavior in terms of action-related concepts such as goals, plans, intentions, and beliefs and that their actions are in parts determined by those reflexive interpretations, intentionality, and goal directedness. Today, the concept of human action is taken as a framework for research in several branches of psychology. Examples are theories of motivation (e.g., Gollwitzer, 1990), problem solving (Dörner & Kaminski, 1988), ontogenetic development (e.g., Oppenheimer & Valsiner, 1991), and social (von Cranach, 1991), cultural (Boesch, 1991), and developmental psychology (for a review, see Brandtstädter, 1998) as well as applied domains such as clinical (Schwartz, 1951) or educational psychology (Bruner, 1996).

Actions, as Eckensberger (2001) defines them, are not necessarily observable from the outside. They imply features such as intentionality or conscious activities of an agency and control over action. They have basic structural aspects in that they aim at effects such as reaching a goal and form hierarchies (i.e., more than one goal can be pursued at the same time). Beyond structural aspects of actions, the course of action is relevant. In this sense, different action phases such as the motivational phase of goal selection and the volitional phase of goal pursuit can be distinguished (Gollwitzer, 1990; H. Heckhausen & Gollwitzer, 1987). In all phases, there is an interplay between cognitive and affective aspects of action that can serve as regulatory processes (Eckensberger, 2001). Actions link an actor with his or her (social and nonsocial) environment (e.g., James, 1897/1956). They constitute an overlap between the internal and external action field. The internal action field develops through ontogenetic experiences in the sense of internalized operations, norms, and categories. The external action field (such as culture; Boesch, 1991; Eckensberger, 1995; Shweder, 1990) provides opportunities

and constraints for actions and attributes value to actions. In return, both the internal and external action field acquires affective meaning through action.

The current literature suggests a number of *goal* concepts. The most prominent examples are personal projects (B. R. Little, 1983), life tasks (Cantor, 1990, 1994), personal strivings (Emmons, 1986), current concerns (Klinger, 1975, 1977), future selves (Roberts, 1992), and possible selves (Markus & Nurius, 1986). Comparing examples of these various goal approaches, Omodei and Wearing (1990) revealed several shared features, despite slightly different theoretical formulations (cf. Brunstein & Maier, 1996; Emmons, 1997). Emmons, King, and Sheldon (1993) summarized these common aspects as follows: Goals represent reference values in the sense of desired states to be achieved or maintained or undesired states to be avoided. As a consequence, discrepancies from one's goals initiate and structure behavior across situations and time and impact on ongoing thought and emotional reactions. Persons can generate their individual set of personal goals. The term 'personal' refers to the fact that a person sets goals that are influenced by individual normative and non-normative developmental history as well as interpreted and reconstructed by the individual. One way to assess these personal goals is to ask individuals to generate their personal list of goals (i.e., idiographic method). Each personal goal then can be evaluated with respect to a number of nomothetic goal characteristics such as importance or level of abstraction. While goals may not necessarily be conscious at all times, when asked, people can give accounts of what they are trying to achieve. It is not a defining characteristic, however, that a goal be represented in consciousness while a person is actively pursuing it (cf. Bargh, 1990; Gollwitzer, 1990; Wilson, 2002).

Goal systems are hierarchically structured. They comprise functionally dependent superordinate and subordinate goals. Superordinate goals are at the upper end of the hierarchy and provide general life orientations. Subordinate goals are often more concrete or refer to shorter future perspectives for goal attainment. Subordinate goals in turn have subgoals and so on. On this representational level, the link to the concept of developmental tasks is most obvious.

As suggested in the context of *Theory of Action Identification* (Vallacher & Wegner, 1985; Wegner & Vallacher, 1986), actions imply means and outcomes and can be defined at various levels, ranging from low-level to high-level goals. A person's goal representations can vary in the *level of goal specification* (Emmons, 1992; B. R. Little, 1989; Vallacher & Wegner, 1989). Goals can be phrased in relatively abstract, broad ways (e.g., "*always try to be a reliable person*"). These high-level goals signify the purpose or consequences of an action. They convey a more general understanding of the action, indicating *why* the action is done or what its effects and implications are. Higher-level identities increase understanding of the action. Alternatively, goals

can be framed in specific, concrete ways (e.g., "*try to call parents once a week*"). These low-level goals specify how the action can be performed. They convey the details of the action and indicate *how* the action is done. Lower-level identities support effective action procedures and often constitute the means to higher identity ends. B. R. Little (1989) describes the dynamics of representing one's goals on a higher ("magnificent obsessions") versus lower ("trivial pursuits") level of specification. Given these differences in the level of goal specification, and in this sense a hierachical structure of personal goals, a more concrete goal can be a means to pursue a more abstract goal.

As in the present dissertation respondents generated their personal goals, they themselves defined their level of goal specification and differentiated between means and ends. Taking the defining characteristic of goals as personal into account, the present research adopted a mixed idiographic–nomothetic approach to assessing goals and goal-related information. First, participants generated a list of their personal goals. Then, they rated each of their goals with respect to various goal characteristics, one being personal goal orientation as the central variable of this dissertation. The present definition of personal goals comprised the attainment and the maintenance of desired states as well as the avoidance of undesired states, while referring to different levels in the goal system hierarchy. Moreover, I examined goals people were able to communicate (Studies 1 and 2) or that could be inferred from observing their goal selection behavior (Studies 3a and 3b).

Personal goals can be expressed and therefore measured on different assessment levels. When asked, people can report about their goals and ways to pursue these. Furthermore, as elaborated earlier, goals and goal pursuit activate specific goal-relevant cognitive structures (mind-sets; Gollwitzer, 1990). And, finally, people's goal selection and goal pursuit behavior can be observed. Given these multiple expressions of personal goals (self-report, cognitive activation, and behavioral preference), the present studies adopted a multi-method approach to investigate personal goals. Self-reported goals (Studies 1 and 2) as well as goal selection behavior were assessed (Study 3a and 3b). There were several reasons for the present studies' multi-method approach to goals: Even though people are able to generate an idiosyncratic list of goals when asked to do so, there are several shortcomings when assessing personal goals via self-report measures only. Self-reported goals might for example be a consequence of post-hoc rationalizations and explanations of individual actions by the person him- or herself. Self-report requires that the person is able to report about his or her goals. That means the goals have to be consciously represented and the person needs to have introspective access to his or her goals as a necessary precondition (Nisbett & Wilson, 1977). Furthermore, a person's tendency to respond in socially desirable ways as well as processes of self-deception (Paulhus, 1991; Shedler,

Mayman, & Manis, 1993) or demand characteristics, a person construes, (Orne, 1962; Weber & Cook, 1972) can bias personal report and evaluation of goals. Finally, research suggests that memory biases and features of the specific context might play a role in this respect (Ross, 1989; Schwarz & Strack, 1999). In sum, the validity of respondent's answers can be influenced by potentially inadequate memory or even lack of knowledge, social desirability and self-presentation, self-protective and transformational processes and individual constructions of reality, and by the wording and context in which the question is presented.

The Interplay of Goal-Related Resources, Goals, Goal-Directed Actions, and Development

To understand the interplay between goal-related resources, goals, goal-directed actions, and development it is necessary to combine the lifespan developmental view with theoretical considerations on the concept of personal goals. This synthesis allows to reflect on two questions: How are age-related changes relevant to the basic principles underlying the organization of action? And what does the action-theoretical emphasis on intentionality and goal directedness add to research and theory on development?

Both the interactive and contextual perspective on development as well as action theory assume that individuals are depicted as modifying the environment at the same time that they are modified by it, and variation in both individuals and contexts is considered to be important (Bronfenbrenner, 1979; Dixon & Lerner, 1983). As outlined earlier, the concern of lifespan developmental psychology is the description and explanation of stability and change of behavior and experience over time. Thereby it focuses on understanding the directionality of development as well as the functional level. Thus, the developmental perspective is helpful whenever the behavior identified involves a change process and is better understood if placed in the context of chains and patterns of antecedent and subsequent events (cf. P. B. Baltes et al., 1980). Lifespan changes are often complex (multidirectional, multidimensional, and multifunctional), involve strong contextual and interactive effects of normative age-graded, normative history-graded, and non-normative influences, and accentuate the dynamic relationship between ontogeny and phylogeny. As they draw upon past events and future expectations, it focuses on longer-term individual–context interactions. This can include the individual's developmental status, developmental tasks, and changes of context or situation such as starting a new job or moving into a retirement home. Thus, lifespan development covers distal in addition to proximal causes and offers long- in addition to short-term explanations, as well as their interrelatedness. It can contribute to action theory by emphasizing that the components of action and the relationships between them may show developmental change. As P. B. Baltes, Reese, and Nesselroade (1977) state it offers a conceptual and methodological

framework for the study of behavioral development and, in the specific context of my dissertation, for the study of personal goals and age-related changes in personal goal orientation.

Action theory, in contrast, emphasizes the immediate interaction between the individual and the context in terms of specific situational demands and the agent's current states and dispositions (i.e., proximal causes). Chapman and Skinner (1985) propose that action theory can contribute to developmental psychology by emphasizing ways in which agents reflectively interpret their own (and others') actions. According to this view, action is in part determined by such reflexive interpretations, which typically make use of concepts such as goals, plans, intentions, regulations, and beliefs. Thus, embedding the concept of personal goals into lifespan development allows to conceptualize the individual as active agent of developmental paths in a person–environment interaction (Brandtstädter & Lerner, 1999; Ford, 1987; Freund & Baltes, 2000; Lerner & Busch-Rossnagel, 1981). Furthermore, the reflexive character of action means that the development of action is influenced by the development of the understanding of action.

Goal theories suggest that personal goals contribute to the activation and organization of action (Austin & Vancouver, 1996; Pervin, 1989). There are two functions of personal goals on development: They motivate and direct behavior over time and situations into meaningful action units and they favor acquisition and use of resources (cf. Boesch, 1991; Freund, 2003). In this function, personal goals help to describe the direction of development. In addition, the selection and pursuit of personal goals improves individual competences and new resources, which can be used for further goal attainment. In this regard the concept of personal goals is fruitful in predicting the functional level of a person. Of particular importance are the selection of goals from a pool of possible alternative options in the context of available resources and the social context, the investment of resources into the pursuit and maintenance of goals in the face of setbacks and losses. Goals can guide behavior in influencing life planning, decision-making, and future life course, and they can give meaning, purpose, and direction to people's lives (Baumeister, 1991; Emmons, 1989; Ford, 1987; Gollwitzer, 1990; Klinger, 1977; Nurmi, 1991; Wong & Fry, 1998).

As demonstrated by a number of authors, goals motivate and focus attention and behavior to those stimuli and actions in a given situation that are goal-relevant (Bargh & Ferguson, 2000; Gollwitzer, 1996; Gollwitzer & Moskowitz, 1996; Kruglanski, 1996; Pervin, 1989; Wiese & Freund, 2001). As a consequence, they reduce situational complexity and facilitate interaction with a complex environment (Gollwitzer, 1991). Personal goals and goal-related processes are not only linked with cognition and behavior but also with affect. Several authors argue in favor of this relationship because it determines commitment to goals, energizes goal-directed action, and gives individuals feedback on the actual status of their goals

(Kruglanski, 1996; Pervin, 1983). In turn, goals can determine the quality and intensity of affective experiences (Frijda, 1986; Klinger, 1977; Lazarus, 1991; Oatley, 1992; Ortony, Clore, & Collins, 1988).

Taken together, personal goals and the basic regulatory processes of goal selection, pursuit, and disengagement are central aspects that help to understand direction and level of individual development and adaptive life-management (e.g., Brandtstädter, 1998; Chapman & Skinner, 1985; Emmons, 1986; Freund, 2003; Freund & Baltes, 2000; Gollwitzer & Bargh, 1996; J. Heckhausen, 1999). Goals emerge from and determine the nature of people's transactions with their surrounding world. Experiencing the effects but also the limitations of goal-directed action can feed back to individuals' view of the world, the self, personal goals, beliefs and wishes, and further goal-directed action (cf. Frese & Sabini, 1985). Brandtstädter (1998) describes this interplay of goals, goal-directed action, and development as follows:

> "*Through action, and through experiencing the consequences of our action, we construe representations of ourselves and of our material, social, and symbolic environments, and these representations guide and motivate activities by which we shape and influence our behavior and personal development. Action thus forms development and development forms action: The individual is both the active producer and the product of his or her ontogeny.*" (p. 807)

It is proposed that human behavior is goal-directed, intentional, and carried out by volitional agents (Brandtstädter, 1998; Brandtstädter & Greve, 1999; Ford, 1987). That is, persons are able to intentionally shape their environment and direct their behavior in accordance with their goals, at least in parts. This implies that they can make plans about how to attain their goals. They can initiate, monitor, and change their behavior and even themselves (cf. Carver & Scheier, 1998; Gollwitzer, 1996). As biological and environmental forces fundamentally influence the range of developmental opportunities, human beings, however, are not "omnipotent" creators of their biographies. Human agency is rather restricted, as amounts and usage of goal-relevant resources are only limited (P. B. Baltes, 1997). The following excursus discusses potential constraints of individuals as active agents of their developmental trajectory and presents the notion of life-management as encompassing unintentional, unconscious, and uncontrollable components.

Excursus: Life-Management Encompasses Automatic, Unintentional, and Unconscious Processes

So far, I have conceptualized human action and life-management as partly influenced by the active and intentional individual characterized by a potential for awareness of, and control over, developmental processes. The question arises whether life-management and development is necessarily intentional and consciously represented or whether automatic, unintentional and uncontrollable processes also play a role. Do personal goals have to be intentional and in

conscious awareness in order to direct behavior? Or is an individual's conscious awareness of actions and developmental outcomes only limited?

More than a century ago, James (1890/1904) proposed that goal-directed physical movement is preceded by a mental representation of such movement. His analysis of ideomotor action held that an idea of action tends to produce the action unless something intervenes to prevent it. This supports the idea of cognitive representations of action functioning as templates for subsequent overt behavior. Drawing upon James' work, *Automotive Theory* (Bargh, 1990, 1996; Bargh & Barndollar, 1996; Bargh & Gollwitzer, 1994) suggests that behavior and cognitive concepts that are repeatedly and consistently activated in a specific environmental context (i.e., situation–behavior contingencies) become automatized and fall under the direct control of given situational cues. Subsequently, they can be triggered by environmental stimuli without involvement of reasoning processes or the individual's conscious awareness, choice, and guidance, and can operate autonomously in a given situation. On these theoretical considerations and in line with authors who have recently challenged the view of persons as conscious initiators of their actions (e.g., Bargh & Ferguson, 2000), one can assume that life-management also encompasses unintentional and unconscious processes.

There is convincing empirical evidence supporting these propositions (for an overview, see Bargh & Ferguson, 2000). Bargh, Chen, and Burrows (1996), for instance, demonstrated the effect of concept activation for subsequent behavior. Younger adults walked more slowly after having been presented with the concept of old age, which is associated with a decrease in walking speed. Accordingly, younger adults' reaction times in a simple lexical decision task were prolonged after being primed with faces of elderly people (Kawakami, Young, & Dividio, 2002).[3] In line with James (1890/1904), one possible underlying process is that the activation of a concept (e.g., "slow") also activates the respective motor code (Hommel, Muesseler, Aschersleben, & Prinz, 2001). Another process could be the automatic assimilation of one's own behavior to the behavior that is displayed by the environment (e.g., adjusting one's walking pace to that of one's social environment; cf. Freund & Ebner, in press).

This research shows that concept activation, information processing, and behavior are automatically linked. On an unconscious level, age-related normative expectations may influence which behaviors a person of a certain age selects. The automaticity assumption, however, refers to situational activation of an earlier, consciously set goal. Thus, *Automotive Theory* describes the process of automatic initiation of action, but does not propose or test whether goal selection is unconscious or unintentional. Moreover, dependent on the definition of personal goals one can question if these activated concepts and the consequent behaviors really trigger personal goals

[3] Dijksterhuis and Corneille (2000), however, showed that this effect holds for experimental subliminal priming only in younger adults who have frequent contact with older adults and hold strong age stereotypes.

and goal pursuit. So far, the processes of how stereotypes or expectations about the activated concept affect behavior are not clear.

Even if the goal is consciously represented, a person does not necessarily have full control over goal attainment and pursuit. Examples are the occurrence of counter-intentional acts the person tries to suppress or the intrusion of counter-intentional thoughts (Wegner & Wenzlaff, 1996). Furthermore, social norms or environmental cues may evoke behavior that is not in accordance with a person's goals (e.g., Freedman & Fraser, 1966). There are thoughts, motives, and actions that are often not subject to intention and conscious will (e.g., implicit motives; Brunstein, Schultheiss, & Grässmann, 1998). In contrast to unconscious goals, implicit motives are typically conceptualized as being based on early acquired, affective preferences for certain fundamental incentives such as power, affiliation, and achievement (McClelland, 1987; McClelland, Koestner, & Weinberger, 1992). Implicit motives develop independently of symbolic conceptualizations in language and are only rarely equivalent to explicit goals (Brunstein et al., 1998).

In sum, people do not necessarily have complete control over the specific outcomes and consequences of their consciously conducted actions, since they are not always fully informed and aware of contexts and causal relations that enact on their behaviors (Brandtstädter, 1999). In accord with the idea of multifunctionality of human behavior and development (e.g., P. B. Baltes, 1987, 1997), consequences of goal-related behavior may therefore influence development in unexpected, undesired, even unrecognized ways (Dannefer, 1999). Specific life events and chance encounters such as an unintended meeting of persons unfamiliar to each other can play a prominent role in shaping the course of human lives (Bandura, 1982; Brim & Ryff, 1980; Filipp, 1990). Consequently, human action and life-management in general is not necessarily consciously expressed and implemented in behavior. In fact, the way personal goals are formulated and take effect upon development may only partly be controlled and intentional, but may also constitute an automatic aspect of self-development. Acknowledging automatic, unconscious, and uncontrollable aspects in goal-related processes does not imply that all or even most goal-related processes fall into this category. People may still have (or feel they have) intentions and actively set and pursue goals. For instance, younger adults may decide to set their goal standards very high to increase their skills, to be able to keep up with their peers, and to maximize their potentials, whereas older adults may choose to focus on maintaining their status quo and counteracting resource losses. And these active decisions can have behavioral consequences.

In reaction to this discussion, the present research covered consciously represented aspects of goals and personal goal orientation by assessing them on the self-report level. It also

examined potentially unconscious aspects by measuring goals on the behavioral level, assuming that goal selection behavior is less under a person's conscious control than the report about one's goals would infer.

Balancing Gains and Losses: Adaptive Development Over the Lifespan

Having presented the idea of development as a flexible and adaptational person–environment interaction, in which resources, goals, and actions play an essential role, as well as having highlighted the mutual contributions of integrating developmental and action perspectives, the next section introduces the concept of adaptive development over the lifespan.[4] This covers a presentation of subjective well-being as one possible criterion of successful development as well as discusses processes of balancing developmental gains and losses throughout life as another aspect of successful life-management.

What is Adaptive Development and What Are Processes That Favor it?

Efforts to keep the balance between gains and losses favorable represent an essential aspect of human action and personal development across the lifespan (P. B. Baltes, 1987, 1997; Brandtstädter, 1986). On an abstract level, adaptive (i.e., successful) development can be defined as a life-long process of generating new resources and adjusting to physical, social, and psychological changes with the aim to simultaneously maximize developmental gains and minimize developmental losses (M. M. Baltes & Carstensen, 1996; P. B. Baltes, 1997; P. B. Baltes & Baltes, 1990; Brandtstädter, 1986; Labouvie-Vief, 1981).

Within this abstract conceptualization, two approaches can be distinguished (cf. Freund & Riediger, 2003): (1) a criteria-oriented approach, "*What is successful development?*" and (2) a process-oriented approach, "*What are the processes and conditions that favor a person's developmental 'success'?*" The criteria-oriented approach aims at defining criteria as means and end-points of successful aging. The process-oriented approach tries to identify processes of developmental regulation. That is, it refers to processes that require the investment of means into attaining ends as well as the development of new resources. It views individuals as continuously adapting to changing environmental situations, acting upon and creating environments to fit their needs and to create new resources (e.g., Lawton, 1989; Lerner & Busch-Rossnagel, 1981). It underscores the role of motivational processes such as setting, pursuing, maintaining, and disengaging from goals as central for developmental adaptation.

[4] I use the terms "adaptive development" and "successful development" interchangeably.

So far, there is no commonly accepted set of criteria that designate an individual's successful development, and it is generally agreed that a comprehensive characterization should follow a multi-criteria instead of a mono-criterion approach. As Freund and Riediger (2003) report, the mono-criterion approach, however, often uses subjective well-being as the only criterion signaling successful aging. A multi-criteria approach, in contrast, ensures that optimizing environmental conditions supporting successful aging as well as the person–environment interaction are taken into consideration (Havighurst, 1963; Lawton, 1989; Thomae, 1976). These multiple indicators integrate objective (i.e., observable) and subjective (i.e., self-reported), short-term and long-term, domain-specific and general, and static (i.e., with a definite endpoint) and dynamic and ever-ongoing (i.e., focusing on the person–environment interaction) components (M. M. Baltes & Carstensen, 1996; P. B. Baltes & Baltes, 1990; Lawton, 1983). P. B. Baltes and Baltes (1990), for example, provide a list of objective and subjective criteria that are most often considered in the literature on successful aging including longevity, physical and mental health, cognitive functioning, social competence, productivity, perceived personal control, and life satisfaction.

The present research adopted a multi-criteria approach to assess adaptive development on different levels of analysis. It included two subjective measures of well-being, namely general and goal-specific well-being. In addition, it measured the process of balancing developmental gains and losses by shifting personal goal orientation from growth to maintenance and prevention of loss throughout life as an indicator of successful development. In the following sections, I first discuss the concept of subjective well-being. Next, I present the *SOC-Model* as a prominent model of life-long adaptive development that stresses the importance of a favorable gain–loss balance as fundamental characteristic for successful developmental regulation. It served as the general, meta-theoretical framework of the present dissertation. Then, two additional models for understanding adaptive human development are reviewed: The *Dual-Process Model of Assimilative and Accommodative Coping*, and *OPS-Theory*. All three theories view development as multidirectional, comprising growth and achievement of higher levels of functioning, maintenance of functional levels, and loss-regulation. They all refer to personal goals and basic goal-related processes such as setting, pursuing, or disengaging from goals as means to successfully shape individual development and as central for understanding life-long developmental regulation. Assuming that resources are limited throughout life, and increasingly so in old age, all three models argue that management of loss gains prime importance in late life. Together, they provide the specific lifespan developmental theoretical background of the present research.

Subjective Well-Being as One Possible Criterion of Adaptive Development

As Freund and Riediger (2003) review, most empirical research employs subjective indicators, such as the individual's sense of well-being, as the only criterion of successful adaptation to life circumstances, even though adding objective criteria such as health, educational status, or cognitive functioning would be important. There are several arguments supporting the inclusion of subjective well-being as an indicator of adaptive developmental regulation. Beyond pragmatic considerations (subjective evaluations are easily accessible), individuals often orient themselves according to their subjective evaluations in the process of life-management (M. M. Baltes & Carstensen, 1996). Moreover, adaptation to life-stage specific challenges and a successful person–environment interaction results in subjective well-being (Havighurst, 1963; Lawton, 1983).

The literature distinguishes between two categories of defining subjective well-being, namely "broad" and "narrow" conceptualizations (Kunzmann, 1999). They vary in the number of defining facets. In broad definitions (Lawton, 1975; Neugarten, Havighurst, & Tobin, 1961; Ryff, 1989), various facets reflect well-being. The conceptualization of positive psychological functioning, comprising the dimensions self-acceptance, environmental mastery, positive interpersonal relations, purpose in life, personal growth, and autonomy, is one example (Ryff, 1989, 1995; Ryff & Keyes, 1995). Narrower conceptualizations distinguish three dimensions of subjective well-being—one cognitive dimension, which is often labeled life satisfaction, and two emotional dimensions, namely, positive and negative affect (Bradburn, 1969; Campbell, Converse, & Rodgers, 1976; E. Diener, 1984; Veenhoven, 1991). These dimensions, again, can be split into more specific areas of interest such as domain-general vs. domain- or goal-specific evaluations of satisfaction. The present study assessed both cognitive and emotional components of well-being. Moreover, domain-general as well as domain- and goal-specific satisfaction (i.e., satisfaction with goal attainment and satisfaction with goal progress) were measured.

Having discussed subjective well-being as one criterion of successful development, the following sections describe how goals and goal-related processes impact on subjective well-being and adaptive development in general.

How Goals and Goal-Related Processes Impact on Adaptive Development

Empirical evidence has shown that personal goals are related to subjective well-being (e.g., Emmons, 1986; Emmons & King, 1988; B. R. Little, 1987; Omodei & Wearing, 1990; Palys & Little, 1983; Sheldon & Elliot, 1999; Zirkel & Cantor, 1990). What are the mechanisms underlying this relation? And how do goals and goal-related processes such as goal selection, goal pursuit, or disengagement from goals influence successful aging?

By nature, human beings are goal-oriented organisms. They organize their lives around the pursuit of goals that reflect their fundamental needs (e.g., autonomy, competence, relatedness; Ryan, 1995). Successful development implies that individuals succeed in progressing toward their goals or reach some desired state (M. M. Baltes & Carstensen, 1996; Carver & Scheier, 1990; Maslow, 1954; McClelland, 1987). Goals provide persons with standards and ideal outcomes against which they can evaluate their actual level of functioning, their progress in the direction of higher levels of functioning, and the effectiveness of their goal-related behaviors. Humanistic psychology proposes that an individual's sense of well-being depends upon the progress toward his or her goals, especially when they are in accord with "organismic" or "innate" needs (Maslow, 1954; Rogers, 1963; see also Brunstein et al., 1998). Other authors argue that having personal goals can in itself be a predictor of life satisfaction (Brunstein, Schultheiss, & Maier, 1999; Emmons, 1996). E. Diener and Fujita (1995), as reported earlier, support that not goals themselves but the availability of goal-related resources is positively related to satisfaction with life. Brandtstädter and Rothermund (2002a), in contrast, maintain that goals can ambivalently affect well-being. They argue that neither goals nor resources bring about goal attainment or successful development. Rather, unattainable goals can lead to dissatisfaction and depression if they are not abandoned or readjusted.

Thus, setting and maintaining challenging but attainable goals and standards are important self-regulatory processes conducive to successful development (Brandtstädter & Renner, 1990; Carver & Scheier, 1981, 1982; Freund & Baltes, 2000; J. Heckhausen, 1999; Wrosch & Freund, 2001). In addition, disengaging from goals that are no longer attainable, restructuring goals, or reallocating goal-related resources into alternative goals and domains of functioning are facets of adaptive functioning (Klinger, 1975; Wrosch & Heckhausen, 1999). Three models are presented that describe this initiation of goal-related actions and investment of goal related resources into resource-demanding processes as crucial for achieving desired developmental outcomes.

The Model of Selection, Optimization, and Compensation—A General, Meta-Theoretical Framework for Understanding Adaptive Development

The *SOC-Model* (P. B. Baltes, 1987, 1997; P. B. Baltes & Baltes, 1980, 1990) provides a general, meta-theoretical framework for understanding human development across different domains of functioning and stages of life. It is a general psychological theory of behavior development. The model proposes two basic assumptions: First, development is a process of resource generation in the sense of increases in reserve capacity. And second, development operates within limited internal and external resources. In all phases of life, ressources can be generated as well as they are limited. Thus, *SOC-Theory* accounts for development in general and allows specifying how individuals effectively manage lifespan changes in biological, psychological, and social resources that form opportunities and constraints on levels and trajectories of development. The theory suggests three fundamental processes of life-management, namely, *selection*, *optimization*, and *compensation*. The *SOC* behaviors are seen as universal processes that need to be defined with respect to specific contexts and person-specific features. Their implementation can vary along the dimensions active–passive, internal–external, and conscious–unconscious.

Each of these processes as well as their orchestration are proposed to contribute to adaptive development in different periods of life and under changing opportunities, constraints, demands, and needs. In this context, successful development is described as the simultaneous maximization of gains and minimization of losses over the life course. Individuals experience developmental gains and develop their potentialities by engaging in *SOC* behaviors. In this sense, *SOC* is a development-producing set of processes that results in increasingly higher levels of functioning. It constitutes an effective way to develop resources and to reallocate resources between the three basic developmental functions of growth, maintenance, and loss (and their regulation).

SOC-Theory can be approached from many different theoretical perspectives such as social, behavioral-learning, cognitive, and neuropsychological viewpoints (M. M. Baltes & Carstensen, 1996; P. B. Baltes & Singer, 2001; Marsiske, Lang, Baltes, & Baltes, 1995). Freund and Baltes (2000) proposed an action-theoretical conceptualization of *SOC* (see also Freund et al., 1999). It embeds *SOC* in the domain of active life-management and refers to developmental regulation through selection and pursuit of personal goals. It implies the promotion as well as the use of goal-related resources.

From this perspective, selection is a general-purpose mechanism that generates, refines, and efficiently uses resources and aims at achieving higher functional levels. In this sense, it is a mechanism of resource generation. At the same time, it takes the fact into account that resources are finite at any given point in life so that not all goals can be pursued. Thus, advances

in some domains can imply a reduction of advances in other domains, and options that were not selected may no longer be available at later time points. Specifically, it is manifested in the process of developing, choosing, and committing oneself to a subset of goals out of a pool of possible alternatives. Selection gives direction to development by generating goal-related resources and by guiding and focusing them on certain goals (i.e., canalization, specialization, expertise). Assuming limited resources in all phases of life, the selection of specific goals and domains of functioning on which to focus one's resources is a central process of developmental regulation. Adequate goal selection requires setting goals for which resources are available and that match a person's needs and environmental demands (Freund, 1997). In the context of research on life investment and investment selectivity (e.g., Staudinger & Fleeson, 1996; Staudinger, Fleeson, & Baltes, 1999), Staudinger and Freund (1998), for example, demonstrated that a focus on few life domains only was particularly adaptive for older people who were confronted with resource constraints.

The selection principle is further differentiated in terms of *elective* and *loss-based selection* (Freund & Baltes, 2002a). Elective selection refers to developing means or choosing one goal out of multiple (new) goals and options. It is a prerequisite for advances. Loss-based selection, in contrast, becomes necessary when resources such as time, energy, and capacity are limited. It is a way to respond to actual or impending losses. It refers to changing or adjusting goals and standards in accordance with available goal-relevant resources. Restructuring one's goal hierarchy by exclusively focusing on the most important goal, lowering one's aspiration level, or finding a substitution for unattainable goals are possible manifestations. Both, elective and loss-based selection, imply the structuring and continuing reorganization of personal goals.

Optimization and compensation refer to processes of goal pursuit, that is the investment of resources into obtaining and refining the means that are relevant for attaining and pursuing one's goals. Optimization refers to means for achieving desired outcomes and aims at coordination and acquiring and generating new resources or practicing and refining earlier learned skills to serve the growth aspect of development. Relevant means range from genetic expressions to behavior, cognitive skills, health, social support, personality, and educational learning. Studies on expertise, for example, demonstrate the key role of practice of skills to achieving more refined levels of functioning (Ericsson, 2003; Ericsson, Krampe, & Tesch-Römer, 1993; Ericsson & Smith, 1991; Krampe & Baltes, 2003).

Compensation addresses the regulation of loss or decline in means and goal-relevant resources that threatens the maintenance of a given level of functioning. It denotes an alternative strategy for managing and counteracting losses by changing goal-relevant means to attain a certain goal instead of substituting it (loss-based selection). When previous goal-relevant

means are no longer available, compensation can involve substituting lost means. The use of hearing aids to counteract hearing losses is one example. Phenotypically, the strategies used for optimization and compensation such as acquisition and practice of skills, energy and time investment, or activation of new or unused resources can overlap.

The theory states that the use of *SOC* strategies changes over the lifespan as a function of available internal and external resources (P. B. Baltes, 1997; P. B. Baltes & Baltes, 1990; Freund & Baltes, 2000). The expression peak of all three regulatory principles should be in adulthood, with elective selection and compensation increasing in importance with advancing age when resource losses become more salient.

The *SOC-Theory* allows the integration of the concept of developmental tasks. Developmental tasks imply the direction of development toward age-appropriate life contexts and themes. *SOC-Theory* refers to processes such as goal selection and pursuit that help to implement as well as successfully master developmental tasks. The *SOC-Model* stresses the importance of resource development through selection and pursuit of specific goals. Furthermore, it emphasized that orchestration of goals through the three *SOC* processes and the differential allocation of resources. In this sense, there is a clear connection to the time- and context-related structure of developmental tasks. Managing age-appropriate developmental tasks provides access to internal and external resources that facilitate achievement of these tasks. In other words, the selection of personal goals in accord with developmental tasks favors optimization and compensation in the face of losses, as more resources are invested into and focus on pursuing this specific goal than other goals. In this sense, the selection and pursuit of age-appropriate goals contribute to successful development. And on a meta-level, acquisition, investment, refinement, and orchestration of *SOC* can be understood as a general developmental task in adulthood.

One could argue that *SOC-Theory* distinguishes the goal pursuit strategies of generating means or resources through optimization and compensation in terms of their outcome orientation, that is, with respect to their gain vs. loss orientation (Freund et al., 1999). Optimization can be seen as oriented toward the achievement of higher functions in means and positive outcomes, whereas compensation is directed toward means that help to maintain a given level of functioning in the face of resource decline and to implicitly prevent the occurrence of negative outcomes (P. B. Baltes & Baltes, 1990). No such distinction has been drawn for the selection principle so far. Therefore, a similar distinction in terms of gain vs. loss orientation for the process of goal selection was proposed as the specific focus of my dissertation. In line with suggestions by Staudinger et al. (1995), who suggest a shift of resource allocation into growth toward maintenance and regulation of loss over the lifespan, I argued that

people select goals with different goal orientations. They can direct their goals toward growth, maintenance, and prevention of loss. Whether and why this personal goal orientation as one goal feature and as a mechanism of adaptive development changes across the lifespan in terms of salience and adaptive function will be discussed later. The next section reports selected empirical evidence conducted in the context of the *SOC-Model*.

Adaptive Development as Endorsement of Selection, Optimization, and Compensation Throughout Life

Several studies provide evidence for the three fundamental regulatory processes of *SOC* in describing, explaining, and modifying psychological development and support their impact on adaptive life-management (for an overview, see P. B. Baltes, Freund, & Li, in press). As elaborated next, the relative prevalence of using and coordinating *SOC* changes with age. Furthermore, people who engage in *SOC* behaviors show more adaptive outcomes. This research comprises different empirical specifications referring to global levels and specific life contexts. It encompasses different assessment levels such as self-report measures, behavior observation, and experimental studies (cf. Freund & Baltes, 2002a). Some approaches simultaneously investigate all three components of *SOC* as well as their orchestration, whereas others focus on some of the processes only (as was the case in the present dissertation which focused on the selection principle).

Ostrop (1996) identified a large number of proverbs reflecting selection, optimization, and compensation. These proverbs were found to be easily comprehensible and applicable to different life domains. These results suggest that *SOC* behaviors are reflected in intuitive cultural and individual knowledge about pragmatic aspects of everyday human life.

Also using proverbs, in a series of studies Freund and Baltes (2002b) examined whether younger and older adults' lay conceptions of, or preferences for, life-management behaviors were consistent with the *SOC-Model*. In a choice-reaction time task participants were asked to match *SOC*-related and alternative proverbs to sentence stems indicative of everyday life-management situations. Younger and older adults chose *SOC*-related proverbs more frequently and faster than alternative proverbs. Consistent with the *SOC-Theory*, these preferences for *SOC*-related proverbs over alternatives only existed in tasks referring to long-term goals and success but not in contexts involving relaxation or leisure. These findings allow the interpretation that laypersons have a preference for *SOC*-related proverbs over alternatives and that their judgment of the adaptive use of these life-management strategies is consistent with what the *SOC-Model* proposes.

To investigate the impact of a person's self-reported engagement in *SOC* behaviors on adaptive life-management, several studies used versions of the *SOC*-questionnaire developed by P. B. Baltes, Baltes, Freund, and Lang (1999). All versions of this questionnaire are characterized by a target-distractor-choice format. Earlier versions only measured elective selection, optimization, and compensation as the facet of loss-based selection was only later incorporated into the *SOC-Model* and the questionnaire.[5]

Freund and Baltes (1998) applied the *SOC*-questionnaire in a study exploring the associations between several indicators of subjective well-being and the self-reported tendency to engage in *SOC*-related behaviors in a sample of older adults. They found that older adults who reported more engagement in *SOC* behavior were characterized by more positive affect, more satisfaction with aging, lack of agitation, and the absence of social and emotional loneliness as subjective indicators of positive psychological functioning. This shows that using *SOC* is effective up until late in life.

In a similar vein, Freund and Baltes (2002a) investigated a heterogeneous sample of younger, middle-aged, and older adults and found comparable relations. Participants who indicated high engagement in *SOC* behaviors reported more positive emotions and higher levels of positive psychological functioning. The associations remained stable after controlling for self-regulation variables such as tenacious and flexible goal pursuit as well as for person characteristics such as neuroticism, extraversion, and openness to new experiences. As expected, *SOC*-related strategies were most strongly expressed in middle adulthood. That is, middle-aged adults showed higher endorsement of *SOC* than younger and older adults. One exception was elective selection with a positive age trend. This suggests that older adults are selective as motivational agents but report less use of optimization and compensation. This weakening of self-reported optimization and compensation in older ages could be due to optimization and compensation being effortful and resource-demanding. They may exceed resources available in late life. This is especially true for the oldest old or when people suffer from severe illnesses (M. M. Baltes, 1998; P. B. Baltes & Smith, 2003; Jopp, 2002).

Wiese et al. (Wiese & Freund, 2001; Wiese et al., 2000, 2002) applied the *SOC-Model* to goal pursuit in the work and family domain. In a cross-sectional questionnaire study, Wiese et al. (2000) measured self-reported use of *SOC* behaviors of younger to middle-aged professionals in general as well as domain-specifically. Higher endorsement of general and work- and family-

[5] The studies by Freund and Baltes (1998), Wiese and Freund (2001), Wiese, Freund, and Baltes, (2000, 2002), and Wiese and Schmitz (2002) referred to the old version of the *SOC*-questionnaire comprising only the three facets. Freund and Baltes (2002a) and Riediger (2001) assessed the four life-management strategies.

related *SOC* strategies was positively related to various indicators of well-being.[6] Moreover, participants with primarily work-oriented goals reported higher levels of general and work-related well-being than those who engaged equally in work and family goals. These findings underscore the importance of goal selection, by setting priorities as an adaptive regulatory mechanism in personal goal involvement and development. Similar results for younger adults were found in the field of planning (B. B. Baltes & Heydens-Gahir, 2003).

In sum, all presented self-report studies support a positive association between endorsement of *SOC* strategies and indicators of global and domain-specific well-being. Similar findings supporting the adaptive use of *SOC* are reported by F. R. Lang, Rieckmann, and Baltes (2002; see also M. M. Baltes & Lang, 1997).

To decompose the three principles of *SOC*, some research looked at the relations of the single processes to well-being. A study by Riediger (2001) addressed the nature of inter-goal relations as possible characteristics that differentiate between more adaptive and less adaptive aspects of goal selection in active life-management. Inter-goal conflict and inter-goal facilitation were distinguished as two independent properties of inter-goal relations among four goals (one exercise goal and three additional goals). Riediger found that inter-goal conflict was negatively related to indicators of psychological well-being. Inter-goal facilitation, in contrast, was associated with increased intensity in objective and subjective goal pursuit. Old compared to young adulthood was characterized by more inter-goal facilitation, less inter-goal conflict, and more persistence in exercise goal pursuit over time. The study allows the conclusion that specific characteristics of personal goals and goal selection need to be differentiated in order to better understand the process of goal selection and its adaptive function across life. In a similar vein, the present dissertation differentiated goal orientation toward growth, maintenance, and prevention of loss as one characteristic of personal goals with impact on the adaptive function of goal selection in different phases of life.

Several studies demonstrated the relevance of *SOC* as adaptive life-management strategies on the behavioral level. In an experimental approach, Wiese and Freund (2001) showed, in a sub-sample from the Wiese et al. (2000) study, that goal selection leads to preference toward goal-relevant information. Participants worked on five tasks designed to reflect goal structures in preferences for work- or family-related information. In three of the five tasks, younger adults who currently focused on the work domain showed a stronger preference for work-related stimuli than younger adults who felt equally engaged in work and family goals.

Wiese and Schmitz (2002) provide evidence for the relationship between self-reported *SOC* and behavioral outcomes in the context of study success. In a sample of college students,

[6] Longitudinal data replicated these positive associations between self-reported engagement in *SOC*-relevant behaviors and global as well as work-related subjective well-being (Wiese et al., 2002).

Wiese and Schmitz found that students high in self-reported *SOC* behaviors spent more time studying than students low in self-reported *SOC* behaviors. Additionally, students low in self-reported selection and optimization were more likely to cancel their exams.

Several experimental studies identified *SOC* processes and demonstrated age-related differences in these processes in the context of dual-task paradigms (Bondar, Krampe, & Baltes, 2003; Freund, 2002; K. Z. H. Li, Lindenberger, Freund, & Baltes, 2001; Lindenberger, Marsiske, & Baltes, 2000; Rapp, Krampe, & Baltes, 2003). K. Z. H. Li et al. (2001), for example, conducted work on the role of *SOC* in coordinating cognitive and sensorimotor behavior (i.e., simultaneous performance of memorizing and walking). Older adults showed greater costs when performing both tasks concurrently. As expected on the basis that the body is the primary domain where aging losses occur and serious risks exist, older adults selected walking over memorizing as the primary target of resource allocation. Moreover, older adults showed more compensatory strategies (i.e., using a handrail) to keep their balance and to maintain higher levels of performance, whereas younger adults showed more compensatory strategies in the domain of thinking (i.e., slowing speed of presentation for words to-be-remembered). These age-associated effects of differential use of *SOC* in favor of motor over cognitive tasks were stronger when the behavioral system was tested at its limits by increasing task difficulty.

These findings support the idea that *SOC* operate on the behavioral level. Older adults engage in selection (i.e., prioritizing walking over thinking) and compensation (i.e., use of a handrail) to preserve their walking performance when at risk. This preference of older adults to allocate their resources primarily to motor behavior (such as keeping one's balance) rather than to solving a memory problem is an example of highly automatized and largely subconscious *SOC* processes. Rapp and colleagues (2003) obtained similar results with cognitive information processing and motor balance as competing tasks. Bondar and colleagues (2003) showed that younger and older adults could be instructed to allocate resources to different task requirements. In the case of a motor-behavior situation that entailed the risk of falling, however, older adults were unable to flexibly adjust resources. Their differential allocation system manifested itself as robust and asymmetrical, which seems to be adaptive in order to maintain stability.

In sum, this review of empirical findings on *SOC* suggests that people have cultural and individual knowledge about the *SOC* strategies. Self-reported engagement in *SOC* behaviors positively relates to specific and general well-being in younger, middle-aged, and older adults. The use of *SOC* changes over the lifespan. Moreover, there is evidence that *SOC*-related processes are represented on a behavioral level. That is, relations between self-reported *SOC* and indicators for actual *SOC* behaviors exist and show age-differential effects. The replicated results in the context of dual-task research suggest that older adults direct their resources to

those domains of functioning that have high priority for them such as personal goals or maintenance of one's balance. Thus, as *SOC-Theory* predicts, older adults' resource allocation is not symmetrical, but selective and guided by individual patterns of resources and efficacy. Even though the behavioral expression of *SOC* can vary widely, depending upon the domain and stage of life under consideration, the processes and their functions are assumed to be universal. In all, self-report, observational, and experimental research strengthens the assumption that *SOC* constitute adaptive developmental processes. It functions like a development-enhancing and loss-preventing general-purpose mechanism. Given this broad empirical support, the *SOC-Model* can be regarded as a general framework for investigating and understanding lifespan development. It characterizes a system of strategies that permits individuals to master the general tasks of life.

Similar to *SOC-Theory*, the two models of adaptive development presented next—the *Dual-Process Model of Assimilative and Accommodative Mode of Coping* and the *OPS-Theory*—focus on goal-related processes as crucial for successful human development. Whereas *SOC-Theory* provides a general, meta-theoretical framework to understand adaptive development with emphasis on resource generation and reallocation in the face of loss, these other two additional models of successful development focus on management of resource allocation and goal transformations. Thus, they rather focus on resource investment not resource generation. They particularly emphasize the role of perceived personal control for developmental regulation. And they primarily refer to regulation and coping of loss and failure such as through disengagment from personal goals.

Two Additional Models of Successful Development

The Dual-Process Model of Assimilative and Accommodative Mode of Coping

Brandtstädter et al. (Brandtstädter, 1989; Brandtstädter & Greve, 1994; Brandtstädter & Renner, 1990; Brandtstädter & Rothermund, 2002a; Brandtstädter & Wentura, 1995) have proposed two distinct but complementary self-regulatory strategies to optimize the balance between gains and losses in personal development: the *assimilative* and *accommodative mode of coping*. The major motivation underlying these two strategies is to eliminate discrepancies between actual and desired courses of individual development. This dual-process model describes the interplay between active intervention and goal adjustment to changes in action-related resources.

The assimilative tendency aims to reduce or even avoid actual or anticipated loss by adjusting developmental situations and life circumstances to personal preferences and goals. Assimilative means refer to active instrumental, self-corrective, optimizing, and compensatory

activities. An example is intentionally changing one's life-style such as altering dietary habits to adapt one's body appearance to the desired body self. The accommodative tendency, as the opposite strategy, aims at neutralizing discrepancies between actual and desired states by adjusting personal preferences, goals, and standards to situational constraints and changes in action resources. Accommodative reorientations may involve downgrading, or disengagement from, barren goals, revising evaluative standards, lowering aspiration levels, rescaling criteria of success, or even selecting new, feasible goals. Accommodation includes emotional and cognitive reappraisal. It cannot be initiated intentionally, but shapes the selection of goals, and, thus, constitutes a basic mechanism of action regulation in the face of loss.

Brandtstädter and Renner (1990) contend that assimilative and accommodative tendencies can be assessed as habitualized styles or tendencies of coping on a dispositional level. They developed a questionnaire comprising two independent scales: Tenacious goal pursuit and flexible goal adjustment. Tenacious goal pursuit corresponds to the assimilative mode of coping as it indicates continued goal pursuit, even in the face of obstacles and under high risk of failure. In contrast, the tendency to flexibly adjust goals by positively reinterpreting initially aversive situations and abandoning blocked goals corresponds to an accommodative coping style.

The model specifies differential situational conditions that selectively activate or inhibit the two modes of coping. Assimilative tendencies dominate as long as people feel able to actively change a given situation. When experiences of loss increase or assimilative attempts to change the situation are ineffective and action–outcome expectancies become fairly low, accommodative tendencies are activated. This is also the case when assimilative modes were already inefficient from the outset.

According to the *Dual-Process Model of Assimilative and Accommodative Mode of Coping*, goal attainment leads to positive affect. Negative emotions arise when losses of goal-relevant resources lead to unattainability of goals and one falls short of one's ambitions and personal standards. Discrepancies between actual life states and desired outcomes become especially salient in later phases of life when irrevocable losses and uncontrollable events cumulate. Brandtstädter et al. (e.g., Brandtstädter, 1999; Brandtstädter & Greve, 1994; Brandtstädter & Renner, 1990) maintain that in old age this growing impact of negative events on personal development favors an age-related shift from an active, assimilative to a more accepting, accommodative mode of coping. As the aim of accommodative coping is to make the given situation appear less negative and more acceptable, this strategy may help individuals to maintain positive developmental perspectives into old age. With declining productive resources in late life, it may not be possible to maintain the highest standard in multiple domains (Brandtstädter & Wentura, 1995). The main task, therefore, is to manage one's resources

efficiently such that the most important goals can be pursued optimally even at the cost of dropping other goals. Accommodative coping by adjusting one's goal standards to an achievable level and rearranging priorities may therefore be an effective means to protect against decline in well-being and favor adaptive development in later life (Brandtstädter & Greve, 1994; Brandtstädter & Rothermund, 1994; Brandtstädter, Rothermund, & Schmitz, 1998; see also J. Heckhausen & Schulz, 1995). The next section presents empirical evidence supporting these theoretical propositions.

Adaptive Development as Shifting From Assimilative to Accommodative Mode of Coping Throughout Life

In a self-report study with young, middle-aged, and older adults, Brandtstädter and Renner (1990) found that self-reported tenacious goal pursuit and flexible goal adjustment was complementarily associated with age. There was an age-graded gradual shift from active, tenacious goal pursuit to accepting, flexible goal adjustment. In addition, the study demonstrated a buffering effect of flexible goal adjustment with regard to the impact of perceived deficits on dissatisfaction with personal development. This finding suggests that flexibly adjusting one's goals helps to maintain a sense of well-being and satisfaction despite actual experience of loss.

In a large sample of older adults, Rothermund and Brandtstädter (2003) found that compensatory efforts to overcome functional impairments had a curvilinear, inverted U-shaped relationship with age. Compensatory efforts increased up to the age of 70 years. With decreasing availability and efficiency of action-related resources beyond this age, compensatory efforts decreased. This reduction among old and very old people was supported by cross-sectional findings in the context of the Berlin Aging Study (Freund & Baltes, 1998). Rothermund and Brandtstädter (2003) explain the results by arguing that the increasing limitation of action-related resources in very old age limits usage and efficiency of compensatory activities.

Brandtstädter, Rothermund, and Schmitz (1997) used structured interviews with elderly people to explore how accommodative thoughts are expressed in biographical narratives and how they relate to attitudes toward age and aging. Participants who were more prone to express accommodative thoughts reported greater satisfaction with aging, had a more positive attitude toward their biography, and found more continuity and meaning in their life.

Finally, there is empirical indication that the shift from assimilative to accommodative modes involves a fundamental change in the cognitive representation or mind-set of a person. The concept of mind-sets, as elaborated in the *Model of Action Phases* (Gollwitzer, 1990; H. Heckhausen & Gollwitzer, 1987), proposes that when a person becomes involved in a given task, a set of relevant cognitive procedures that further the solution of the task at hand becomes

activated and hence more easily accessible. Different mind-sets are assumed to emerge in the different action phases. In the pre-decisional phase of setting preferences between or among wishes, a "deliberative" mind-set emerges (i.e., open-mindedness). In the pre-actional phase of planning the execution of goal-directed actions, however, an "implemental" mind-set is prevalent (i.e., closed-mindedness). In several studies, the qualitative distinction between different mind-sets, with effects on perception of control over personal goals and goal-relevant information processing is supported (Beckmann & Gollwitzer, 1987; Gollwitzer, Heckhausen, & Steller, 1990; Gollwitzer & Kinney, 1989; H. Heckhausen & Gollwitzer, 1987; Taylor & Gollwitzer, 1995). In line with this research, Brandtstädter and Rothermund (2002b) showed that, compared to the assimilative mode, the accommodative mode of coping favors greater responsiveness to novel external stimuli and a more open, holistic, and thus flexible, mode of processing.

Summarizing the empirical evidence, accommodative modes of coping become more salient in later adulthood as a phase characterized by increasing losses in temporal, social, and physical resources that enforce adjustments of goals and priorities. Accommodative processes seem to help the person to cope with irreversible losses and constraints and to come to terms with developmental outcomes that diverge from originally selected personal goals. In this sense, the *Dual-Process Model of Assimilative and Accommodative Mode of Coping* lends support to the idea that balancing gains and losses, as a function of aging-related changes in goal-related resources across the lifespan, constitutes one aspect of successful development.

The Model of Optimization in Primary and Secondary Control

The *Model of Optimization in Primary and Secondary Control* (*OPS*) put forward by J. Heckhausen and Schulz (1995) is another theory of adaptive development that proposes mechanisms of balancing gains and losses across life and argues for their adaptiveness. In line with *SOC-Theory*, *OPS-Theory* conceptualizes *selectivity* and *compensation* as two central principles for successful developmental regulation (J. Heckhausen, 1999; J. Heckhausen & Schulz, 1999; Schulz, 1986; Schulz & Heckhausen, 1996). Selectivity refers to the focused investment of resources into selected goals. Compensation implies the use of alternative strategies to attain goals when goal-relevant resources are insufficient or loss has occurred. *Optimization* is the higher-order regulatory process that balances selectivity and compensation (J. Heckhausen & Schulz, 1998).

As *SOC-Theory* and the *Dual-Process Model of Assimilative and Accommodative Mode of Coping*, *OPS-Theory* is based on two assumptions (J. Heckhausen, 1997, 1999): (1) A person tries to actively influence his or her development by selecting goals and (2) he or she tries to adapt to the constraints of a given developmental ecology. Individuals are seen as highly motivated to

enact control over their lives and environment. The theory proposes two modes of control—*primary* and *secondary control*. Both types of control aim at mastering the challenges of selectivity and loss. Similar to the process of assimilation proposed by Brandtstädter et al. (e.g., Brandtstädter & Renner, 1990), primary control is regarded as one way to control and modify the external world according to one's goals by making instrumental efforts. If primary control strategies fail, secondary control strategies come into play. The person adjusts and changes his or her goals and standards or uses self-protective attributions or favorable social comparisons. Secondary control aims at focusing and protecting motivational resources for primary control and buffers negative effects of failure in primary control strivings.

In addition, two forms of primary and secondary control strategies are distinguished: selective and compensatory forms. *Selective primary control* comprises actions that are directly aimed at goal achievement. Examples are time investment or investment of effort or skill into the pursuit of goals. *Compensatory primary control* refers to the investment of external resources. It comes into play when internal resources for goal achievement are insufficient or depleted. Examples are employing the help of others or applying new, alternative resources. *Selective secondary control* is directed at the internal world to promote the volitional commitment to a chosen goal. Examples are boosting the value of a chosen goal or the perception of personal control. Finally, *compensatory secondary control* refers to cognitive reframing of goals such as down-regulating the desirability of a blocked goal or disengaging from it.

According to *OPS*, maximization of primary control potential characterizes adaptive functioning. This, however, becomes particularly difficult in older ages as losses are more prominent and less under personal control and declines in goal-relevant resources make the achievement of resource-intensive goals increasingly difficult (Schulz, 1986). As a consequence, with advancing age, compensatory primary and secondary control strategies gain increasing importance for successful life-management. The use of secondary control strategies, in particular, should increase in old age as they contribute to a long-term increase in primary control in buffering negative motivational effects of failure and maintaining self-efficacy and well-being (cf. J. Heckhausen & Schulz, 1995). *OPS-Theory* argues, however, that it is not the four control strategies separately that bring about adaptive development but rather their orchestration in line with developmental opportunities and constraints. The following section provides empirical support for these assumptions.

Adaptive Development as Shifting From Primary to Secondary Control Strategies Throughout Life

In a self-report study, J. Heckhausen, Schulz, and Wrosch (1998) observed that the use of control strategies increased from early to late adulthood. Unexpectedly, however, compensatory

secondary control did not show a positive age trend. Positive associations between all four types of control strategies and self-esteem supported the role of primary and secondary control strategies for adaptive functioning.

Wrosch and Heckhausen (1999) demonstrated that disengaging from unobtainable goals and reallocating resources to alternative domains is functional when goal-relevant resources decline and the opportunity structure for goal attainment becomes less favorable. The authors examined goals in the partnership domain in recently committed or separated adults in early adulthood and late midlife. Self-generated goals were coded into either partnership or other social goals. There were differences in the use of control strategies. Younger separated adults mentioned more partnership goals and reported more primary control strivings for attaining these types of goals. Older separated adults, in contrast, reported more secondary control actions such as goal deactivation. They disengaged from partnership goals and invested their resources into alternative social domains. Moreover, younger separated adults reported a decline in positive affect over a time period of 15 months when they disengaged from their partnership goals, whereas for older separated adults goal deactivation proved beneficial. One explanation offered by the authors is that the objective chances to remarry are lower for people in late middle-age compared to younger adulthood. This age-related change in the opportunity structure for attaining a specific goal is reflected in a shift in importance of this goal and in its functional impact. This research shows that individuals activate and deactivate developmental goals in accordance with age-graded changes in opportunities for goal achievement.

J. Heckhausen, Wrosch, and Fleeson (2001) investigated developmental regulation before and after the developmental deadline for childbearing. Young and middle-aged women with or without children were compared with regard to various indicators of primary and secondary control striving for goal attainment vs. goal disengagement and self-protection. Women approaching the developmental deadline for childbearing were actively engaged in the goal of bearing a child. In contrast, women who had passed the deadline disengaged from the goal. These differences were evident in the number and type of goals nominated as well as the salience of information (such as child-relevant sentences) reflected in an incidental recall task. Moreover, women who had passed the deadline and who showed superior recall of various categories of baby-relevant information were more prone to negative affect. Thus, a negative selective responsiveness to information relevant for an obsolete developmental goal appears to have negative implications for psychological well-being.

Taken together, the findings in the context of *OPS-Theory* provide evidence that the endorsement of control strategies favors successful aging as they help to balance developmental gains and losses. Specifically, the use of compensatory control strategies increases in importance

with positive effects on well-being and adaptive developmental regulation when goal-related resources are lost or become increasingly threatened as is often the case in late adulthood.

The three models of successful development outlined in the sections above provide the theoretical framework for this dissertation's central research questions on age-related differences in personal goal orientation. All three models argue that individuals play an important role in successfully shaping life trajectories by choosing, committing to, or disengaging from, personal goals and in favorably balancing developmental gains and losses.

Understanding development as an ongoing and dynamic person–environment interaction implies that criteria for successful development should comprise factors within the person such as life satisfaction and processes on how well a person is doing in a given (potentially changing) life context (cf. Freund & Riediger, 2003). Therefore, the present studies did not only conceptualize subjective well-being as one characteristic of adaptive development, but also took processes underlying developmental regulation into account. It proposed that there is a motivational shift from goal orientation toward growth to maintenance and prevention of loss across the lifespan. This shift was assumed to constitute a way to successfully manage the changing ratio of gains to losses throughout life. Consequently, goal orientation toward growth, maintenance, and prevention of loss should be related differentially to subjective well-being in early and late adulthood as one indicator of successful development.

Before reviewing empirical evidence and mechanisms underlying this shift in goal orientation and its functional impact, I present the concept of personal goal orientation. In the present context, personal goal orientation constitutes one characteristic of personal goals. To introduce the construct, I outline the research that has evolved around approach–avoidance motivation. In embedding this distinction into a lifespan developmental framework, I develop a rationale for the present studies' developmental conceptualization of personal goal orientation.

Lifespan Developmental Psychology as Integrative Framework: Personal Goal Orientation From a Lifespan Perspective

This section presents the central concept of my dissertation studies, namely personal goal orientation. By defining this concept, the following sections exemplify how embedding an action-theoretical concept such as personal goals into a lifespan developmental context offers several advantages and leads to the generation of new research questions and hypotheses.

Personal Goal Orientation as One Personal Goal Characteristic: Approach–Avoidance Motivation

Personal goals vary with respect to a number of goal characteristics (cf. B. R. Little, 1983). Personal goal orientation as specifically conceptualized in the present context constitutes one of these goal features. Following a suggestion by Emmons (1996; see also Emmons & Kaiser, 1996), research on goals and their relations to well-being can be divided into three areas: goal content, goal parameters, and goal orientation. Goal content refers to characteristics such as goal domains (Nurmi, 1992; Rapkin & Fischer, 1992) or underlying motive dispositions (Brunstein et al., 1998). Goal parameters comprise structural and functional features of goals such as goal conflict and facilitation (Emmons & King, 1988; Riediger, 2001), goal commitment (Brunstein, 1993), or goal importance (Emmons, 1986). Goal orientation, finally, is defined by Emmons (1996) in a very broad sense as individual differences in conscious cognitive representation of goals that can be described by the individual when communicating his or her goals to others. That is, goals differ with respect to their mental representations and the way individuals describe and frame them when asked about them. In Emmons' definition, goal orientation refers to both goal selection and goal pursuit. He gives three examples of goal orientations: (a) the level of action specification (low-level and high-level goals; Emmons, 1992; B. R. Little, 1989; Vallacher & Wegner, 1987), (b) the degree of relative autonomy of goals (intrinsic and extrinsic goals; Deci, Koestner, & Ryan, 1999; Deci & Ryan, 1985; Ryan & Deci, 2000) and (c) approach vs. avoidance motivation. Ford (1992) proposes maintenance vs. change orientation as an additional dimension of goal orientation. A person can strive for change and growth or can be concerned with maintaining his or her state. Other authors using the term goal orientation are Nicholls (1984) to differentiate ego- from task-involvement or Dweck (1991) to distinguish between performance and mastery goals. Performance goals aim at positive and avoid negative judgments of competence. Mastery goals, in contrast, focus on increasing one's competence (cf. Dweck & Leggett, 1988).

As the present studies' interest was on age-associated differences in goal orientation toward growth, maintenance, and prevention of loss, I exclusively referred to the approach–avoidance distinction and the differentiation between change and maintenance orientation when conceptualizing personal goal orientation. According to the basic hedonic principle, beings are motivated to approach pleasure (appetitive, desired end states) and avoid pain (aversive, undesired end states). There are two fundamental motivational tendencies known as *approach* and *avoidance motivation* that are different as a function of their valence. Approach motivation is directed toward the attainment of positive outcomes (e.g., "*improve one's job opportunities*"). Avoidance motivation is oriented toward the avoidance of negative outcomes (e.g., "*avoid becoming unemployed*"). Elliot and Covington (2001) summarize that this fundamental distinction is

applicable to various motivational levels such as global motives, specific goals in varying contexts, and intentional and automatic behavior, for example, motor processes, rudimentary reflexes, and physiological reactions. It is a basic assumption underlying several classic as well as current theories in various areas of psychology.

Below, I give a sampling overview of the historical genesis of approach–avoidance motivation and review the most prominent theories and empirical findings that implemented the concept in the current psychological literature. The section ends by linking these current concepts, their individual differences, and functional impact to the present studies' developmental conceptualization of personal goal orientation.

Historical Genesis of the Concept of Approach–Avoidance Motivation

From the very beginnings of psychology as a discipline, the principle of approach–avoidance motivation was incorporated in theories on motivation. However, it roots well beyond to the ethical hedonism of the ancient Greek philosophers Democritus (460–370 B.C.) and Aristippus (430–360 B.C; see also Epicurus, 342–270 B.C.). These philosophers ethically proscribed approaching pleasure and avoiding pain as the primary guide for human conduct. Viewing these basic principles not only as ethical proscription, but as "scientific" descriptions of how beings behave, was articulated for the first time by the British philosopher Jeremy Bentham (1779/1879) in the context of a psychological hedonism.

James (1890/1904) described pleasure as a "tremendous reinforcer" and pain as a "tremendous inhibitor" of behavior as the "springs of action". He already speculated on neural mechanisms underlying "impulsive" and "inhibitory" motivation. Freud (1920/1955, 1915/1957) regarded "seeking pleasure" and "avoiding pain (unpleasure)" as two basic tendencies underlying psychodynamics. He postulated the "ego ideal" (what the person should do) and "conscience" (what the person should not do) as the two components of the superego (Freud, 1923/1947). Thorndike (1911) incorporated the idea of approach and avoidance into his "law of effect". He suggested that responses are more likely to recur when they are followed by satisfaction and are less likely to occur when followed by discomfort. In a similar vein, B. F. Skinner (1938, 1953) differentiated between reinforcements that strengthen responses and punishing stimuli that weaken responses. He introduced positive reinforcement (provision of a positive) and negative reinforcement (removal of a negative) as two principles of operant learning. According to Tolman (1923), appetites and aversions constitute two types of drives. He maintained that response tendencies are divided into two classes: the tendency to continue and get more of the stimulus or the tendency to remove the stimulus.

In the context of research on goal-seeking behavior and the theory of resultant valence, Lewin (1935) argued for directionality toward goal-objects when its valence is positive and directionality away from goal-objects when its valence is negative. Achievement behavior was hypothesized to be, in part, a function of the dispositional tendencies to seek success and avoid failure (Lewin, Dembo, Festinger, & Sears, 1944). Following the basic ideas of Lewin et al., Miller (1944) introduced the idea of goal gradients and discussed four types of dynamic conflict (i.e., approach–approach, avoidance–avoidance, approach–avoidance, and double approach–avoidance) that can result when valences are incompatible. In his studies of approach–avoidance conflict, he reasoned that the slope of motivation for a positive incentive decreases less as a function of distance from a desired goal than does the strength of motivation to avoid a negative incentive. He contended that this was because approach behavior is guided by internal stimuli, or something about the organism, whereas avoidance behavior is elicited by external cues or something about the environment. Hull (1943) described two classes of acquired drives: conditioned appetitive drives such as hunger and conditioned aversive drives such as pain. In his mathematical theory of instrumental behavior he included the tendency to respond (reaction potential) and the tendency to inhibit responses (inhibitory potential) as two parameters.

In Murray's (1938) conceptualization of dispositional tendencies as psychogenic needs, he included two achievement-based needs: The need for achievement (i.e., the desire to attain success) and the need for avoidance (i.e. the desire to avoid failure). Similar to Murray, McClelland, Atkinson, Clark, and Lowell (1953) explicitly argued for two distinct types of achievement motivation—a positive form oriented toward the possibility of success and a negative form oriented toward the possibility of failure. In his humanistic psychological approach, Maslow (1955) attributed two basic sets of needs or motives to human beings. Growth needs (e.g., self-actualization) that aim at attaining more positive life circumstances and deficit needs (e.g., safety) that involve striving to eliminate negative life circumstances. Introducing the classic need achievement theory, Atkinson (1957) mathematically described the desire to approach success and the desire to avoid failure (both motive dispositions as well as achievement tendencies) as equally important determinants of achievement behavior.

In a trait-personality approach to motivation, Eysenck (1967) argued in favor of the two basic trait dimensions of introversion and extraversion. He posited that introverts display "stimulus shyness" and typically avoid additional stimulation as they have a high baseline level of cortical arousal. Extraverts, in contrast, have a low baseline level of arousal and therefore display "stimulus hunger" in seeking additional stimulation. Bowlby (1969), in research on attachment styles, distinguished between secure (promoting exploration and challenge-seeking) and insecure attachment (leading to caution and preoccupation with safety and protection).

Clearly, the distinction between the motivational principles of approach and avoidance has a rich history and attests historical significance and theoretical utility and power. In sum, the approach–avoidance distinction is represented in most, if not all, major theories on human behavior (for an overview, see Elliot, 1999): Psychodynamic (e.g., Freud), learning theory (e.g., B. F. Skinner), dispositional (e.g., Cattell), neoanalytic (e.g., Erickson), humanistic (e.g., Maslow), social-cognitive (e.g., Rotter), biological (e.g., Eysenck), and cognitive (e.g., Heider). In addition, it can be found in very diverse areas of psychology such as conditioning in animal learning (e.g., Gray, 1982; P. J. Lang, 1995), attitudes (e.g., Cacioppo & Berntson, 1994), cognitive appraisal (e.g., Lazarus, 1991), coping (e.g., Moos & Schaefer, 1993), emotion (e.g., Roseman, 1984), decision making in cognitive psychology (e.g., Kahneman & Tversky, 1979), consistency in social psychology (e.g., Festinger, 1957), health behavior (e.g., Rothman & Salovey, 1997; Rothman, Salovey, Antone, Keough, & Martin, 1993), memory (e.g., Förster & Strack, 1996), mental control (e.g., Wegner, 1994), perception attention (e.g., Derryberry, 1991), psychobiology (e.g., Davidson, 1993), psycholinguistics (e.g., Just & Carpenter, 1971), psychopathology (e.g., Fowles, 1988), social interaction, (e.g., Tedeschi & Norman, 1985), temperament (e.g., Goldsmith & Campos, 1990), achievement orientation in personality (e.g., Atkinson, 1964), traits (e.g., Zuckerman, 1991), and the self, goals, and self-regulatory processes (e.g., Carver & Scheier, 1998; Elliot & Sheldon, 1997; Emmons, 1996; Higgins, 1997, 1998; Markus & Nurius, 1986).

Current Concepts of Approach–Avoidance Motivation: Theories, Individual Differences, Functional Impact, and Representation Levels

The following paragraphs present theoretical background and empirical findings of a selection of concepts on approach–avoidance motivation that are prominent in recent literature and relevant to my research. These constructs are *performance–approach goals and performance–avoidance goals* in research on the *Hierarchical Model of Achievement Motivation* (Elliot & Church, 1997; Elliot & Harackiewicz, 1996), *promotion focus and prevention focus* in the context of *Regulatory Focus Theory* (Higgins, 1997, 1998), and *hoped for selves and feared selves* in research on *possible selves* (Markus & Nurius, 1986). In line with Elliot and Covington (2001), who review that approach–avoidance motivation is represented on various motivational levels such as in conscious and unconscious motives, goals, and behaviors this section ends with a brief overview of representation levels of approach–avoidance motivation.

Achievement Motivation: Mastery, Performance–Approach, and Performance–Avoidance Goals

Research on achievement motivation differentiates between two distinct types of goals, set and pursued in achievement situations: performance and mastery goals[7] (e.g., Ames & Archer, 1987; Dweck & Leggett, 1988). Performance goals aim at validating one's competence (relative to others) or avoid demonstrating lack of ability. Mastery goals focus on acquiring new knowledge and skills and increasing ability and task competence. These two types of goals are conceptualized and interpreted in the context of implicit theories on intellectual achievement. Two types of implicit "theories of intelligence" exist. An entity theory assumes that intelligence is a fixed and uncontrollable trait. This is distinguished from an incremental theory assuming that intelligence is a controllable and increasable quality. It is assumed that one's implicit conception about the nature of intellectual ability creates a meaning system within which goals are adopted and events are interpreted and reacted to. It can serve as a predictor for goal orientation. Dweck and Leggett (1988; see also Dweck, 1996) review empirical findings that show that possessing an entity theory relates to having a performance goal orientation (i.e., increase in one's competence). In contrast, possessing an incremental theory relates to having a mastery-oriented goal orientation (i.e., securing positive judgments or avoiding negative judgments).

In extant research, these two classes of goals are linked to various indicators of affect, cognition, and behavior in achievement situations. A series of studies conducted by C. I. Diener and Dweck (1978, 1980) support the notion that performance-oriented individuals focus on their ability and the adequacy of their ability and avoid giving evidence of its inadequacy. They view challenging problems as a threat to their self-esteem as they regard achievement situations as tests or measures of competence. The focus of performance-oriented individuals is on judgments of ability. Performance-oriented goals influence cognitive and affective processes that make individuals vulnerable to maladaptive behaviors and can engender anxiety. This behavioral pattern is characterized by avoidance of challenges and deterioration of performance in the face of obstacles.

Mastery-oriented individuals, by contrast, focus on mastery through strategy and effort and view challenging problems and achievement situations as opportunities to increase their competence and learning new skills. They create a focus on increasing ability and positively influence cognitive and affective processes that promote adaptive challenge-seeking persistence, intrinsic rewards, pleasure, and performance in the face of difficulty (cf. Dweck & Leggett, 1988; Elliott & Dweck, 1988). The mastery-oriented behavioral pattern involves seeking of challenging tasks and maintaining effective striving under failure.

[7] Dweck and Leggett (1988) used the terms performance and learning goals.

Taken together, empirical results on mastery goals quite consistently promote relations to positive outcomes (Ames & Archer, 1988; Dweck & Leggett, 1988; Elliott & Dweck, 1988; Harackiewicz, Barron, & Elliot, 1998). The empirical picture is less clear with respect to performance goals. Some studies support relations to negative processes and outcomes (Dweck & Leggett, 1988; Elliot & Harackiewicz, 1996; Harackiewicz et al., 1998; Kaplan & Midgley, 1997; Urdan, 1997), whereas other studies show that performance goals only have deleterious consequences on affect, cognition, or behavior when accompanied by low perceived competence (Ames & Archer, 1988; Elliott & Dweck, 1988).

In reaction to these inconsistencies as well as early propositions to distinguish between approach and avoidance motivation within achievement goals (Dweck & Bempechat, 1983; Nicholls, 1984), Elliot et al. (Elliot, 1997; Elliot & Church, 1997; Elliot & Harackiewicz, 1996) re-conceptualized achievement goals in the context of a trichotomous achievement-goal framework. As a centerpiece, their *Hierarchical Model of Achievement Motivation* incorporates the differentiation between approach and avoidance motivation into the performance–mastery distinction. *Performance–approach goals* focus on attaining normative competence and success. *Performance–avoidance goals*, in contrast, focus on the avoidance of normative incompetence and failure. Thus, mastery and performance–approach goals are both construed as approach orientations. They differ in terms of how competence is defined. Performance–avoidance goals are construed as avoidance orientations. Avoidance-oriented goals differ from approach-oriented goals in terms of how competence is valenced, as approach and avoidance motivation differ as a function of valence (Elliot, 1999).

In the *Hierarchical Model of Achievement Motivation* achievement goals in general are conceptualized as relatively specific standards for competence and cognitive representations that direct individuals toward competence-based possibilities. The theory assumes that individuals with high competence perceptions orient toward success and adopt goals with an approach orientation. Individuals with low competence perceptions, in contrast, are expected to focus on failure and adopt an avoidance orientation. In addition to competence perceptions, achievement motives constitute antecedents of achievement-goal adoption. Two distinct types of achievement motives are differentiated: Need for achievement (cf. Atkinson, 1957; McClelland et al., 1953) prompts the adoption of mastery and performance–approach goals, and fear of failure (Birney, Burdick, & Teevan, 1969) prompting the adoption of performance–avoidance goals. Achievement motives are seen as general affectively based dispositions that energize achievement activity and orient people toward success or failure. They need not be consciously represented. Assuming that competence perceptions and achievement motives independently contribute to goal adoption, allows for the simultaneous adoption of both approach and

avoidance goals (Elliot & Church, 1997; Elliot & Harackiewicz, 1996). In sum, the trichotomous achievement-goal framework addresses not only the way competence is defined but also how it is valenced when interpreting achievement behavior.

Even though the model proposes achievement motives and competence perceptions as the primary influences when adopting goals, alternative intrapsychic and environmental factors inherent in the specific achievement situation may play a role (for an overview, see Elliot, 1999). The level of self-esteem, attachment style, need for approval, and socio-economic and socio-cultural backgrounds are examples of potentially relevant intrapsychic variables. If the achievement situation is strong enough, it may directly establish situation-specific preferences for approach or avoidance orientation. Alternatively, the achievement situation may make salient the possibility for success (i.e., challenge) or failure (i.e., threat), and therefore activate the dispositional need for achievement or fear of failure.

Re-examining the link between performance goals and its affective, cognitive, and behavioral consequences when incorporating this extended distinction helps to clarify the inconsistent empirical pattern (Elliot, 1999; Elliot & Church, 1997; Elliot & Harackiewicz, 1996; Pintrich, 2000). The results suggest that it is the avoidance form of performance goals that predicts negative outcomes such as reduced intrinsic motivation, poor performance, and threat-related affect, or null relations. Performance–approach goals, in contrast, primarily relate to positive outcomes such as challenge-related affect, improved persistence, and high levels of intrinsic motivation. These outcomes are similar to those found for mastery goals.

In a related context, Coats et al. (1996) demonstrated that focusing on gains rather than losses has important motivational and affective functions. They found differential effects of approach and avoidance orientation on people who performed well or poorly on a creativity task. When compared with participants in an approach-task condition, those in an avoidance-task condition reported fewer task-related positive thoughts. With respect to thoughts in general, however, avoidance orientation negatively influenced emotional reactions only of those participants who were not doing well on the creativity task. These findings suggest that goals oriented toward avoidance may have a negative impact on self-evaluation, and this may be particularly pronounced among those who perform poorly.

Elliot and Sheldon (1997) found that pursuing a greater proportion of avoidance goals were shown to have deleterious consequences on younger adults' subjective well-being and goal pursuit. Elliot and Sheldon (1998) offer a potential explanation of the negative relation between avoidance goal orientation and well-being or task performance. They suggest that these correlations are due to a decreased perceived competence and self-determination in goal selection. The permanent awareness of undesired consequences associated with avoidance

orientation makes threat appraisals, anxiety, and self-protective processes more likely. Furthermore, avoidance orientation may increase the sensitivity to, and accessibility of, negative information, as well as bias the search for negatively valenced information. This then leads to negative appraisals and perceptions of oneself and one's own competence. They found that the relation between pursuing avoidance goals and physical symptomatology was mediated by three components: participants' evaluation of personal competence and progress in terms of their goal, their perceptions of external controlledness, and personal perception of autonomy.

Recent research by Elliot and McGregor (2001) aims at further elaborating on a full 2 x 2 crossing of the performance–mastery and approach–avoidance distinction. They differentiate between *mastery–approach* (i.e., striving toward development of skills and abilities, advancing learning and mastering of tasks) and *mastery–avoidance goals* (i.e., striving toward avoiding the loss of skills and abilities, forgetting what one has learned or leaving tasks unmastered). First empirical findings with younger adults suggest that the pattern of consequences for mastery–avoidance goals is more negative than that for mastery–approach, and more positive than that for performance–avoidance goals (Elliot & McGregor, 2001).

The conceptualization of mastery–avoidance goals implies that they are likely to be pursued when individuals experience or become worried about deterioration of their abilities. Research on mastery–avoidance goals may therefore be especially fruitful among elderly individuals who are more likely to find their physical and cognitive abilities declining and to encounter difficulties carrying out the activities of their youth. All of the studies conducted so far in the context of the achievement-goal framework, however, have sampled college students. Arguing from a developmental perspective, the findings of greater salience and functional impact of approach compared to avoidance goals may not hold for older adults. As a consequence of the limited resource situation in late life (cf. P. B. Baltes & Smith, 2003), older adults may profit more from setting goals that are directed toward maintaining functions and counteracting losses. They may experience achievement contexts very differently and may be differently motivated in achievement situations than younger adults. Research in the context of achievement motivation typically emphasizes achievement-oriented and competence-based strivings. Goals in achievement situations may always be oriented toward improvement of one's functional level and less on maintenance of one's status quo. In considering later life, however, it is essential to also consider goals related to maintenance of resources and activities as well as avoidance of, and coping with, losses. This should be done within and especially outside achievement situations.

The present studies did not focus on the achievement context when investigating age-related differences in personal goal orientation and its functional impact. In line with research

on achievement goals, it used self-report measures to assess personal goal orientation. In addition, I utilized behavior observation to capture potentially implicit aspects of goal orientation. Even though the *Hierarchical Model of Achievement Motivation* allows for the simultaneous adoption of both approach and avoidance goals, in most studies, external raters categorize personal goals in terms of their approach or avoidance focus. Different from this procedure, I conceptualized goal orientation as comprising three independent dimensions (i.e., growth, maintenance, prevention of loss). Individuals themselves rated the extent to which each of their goals referred to each of these personal goal orientations.

Self-Regulatory Focus: Promotion and Prevention Focus

The self-concept can be described as a system of affective–cognitive structures about the self that lends structure and coherence to self-relevant experiences (Epstein, 1973; Markus & Sentis, 1982). These schemas, which are created from past experiences, are assumed to be hierarchically organized and to play a major role in how information about the self is processed. Consequently, one's self-concept can have an important influence on regulating behavior, organizing interpretation of the world, and determining selective attention and inferences drawn. In addition to knowledge about past and present selves, individuals have self-knowledge about their future potential (Higgins, 1987; Markus & Nurius, 1986).

A theory that integrates research on self-concept and research on motivational orientation is *Regulatory Focus Theory* (Higgins, 1997, 1998).[8] It attempts to explain how people reduce discrepancies between their actual and desired states, as discrepancies may result in negative affect. It distinguishes between two types of desired end states or motivational systems, termed "self-guides": ideal and ought. These systems serve two fundamentally different needs: the distinct survival need for nurturance (e.g., nourishment) and security (e.g., protection), respectively (cf. Higgins, Roney, Crowe, & Hymes, 1994). Nurturance-related regulation involves ideal self-guides or a *promotion focus*, a concern with advancement, accomplishment, hopes, and aspirations. It refers to gains and non-gains. Following ideal self-guides orients a person toward the presence or the absence of positive outcomes ("*This is what I would ideally like you to do*" or "*This is not what I would ideally like you to do*", respectively). It heightens the sensitivity to opportunities for goal attainment. Security-related regulation involves a *prevention focus* or ought self-guides, characterized by a person's representation of desired end states as protection, safety, duties, or responsibilities. It refers to losses and non-losses.[9] Following ought self-guides

[8] In his earlier work, Higgins referred to this theoretical framework as *Self-Discrepancy Theory* (cf. Higgins, 1987).

[9] Critically reviewing the definitions of promotion and prevention focus, one could argue that they confound the positive with the negative outcome focus.

orients a person toward the absence or presence of negative outcomes ("*This is what I believe you ought to do*" or "*This is not what I believe you ought to do*", respectively). It heightens the sensitivity to impediments to goal attainment. Figure 2 summarizes the main propositions of *Regulatory Focus Theory*.

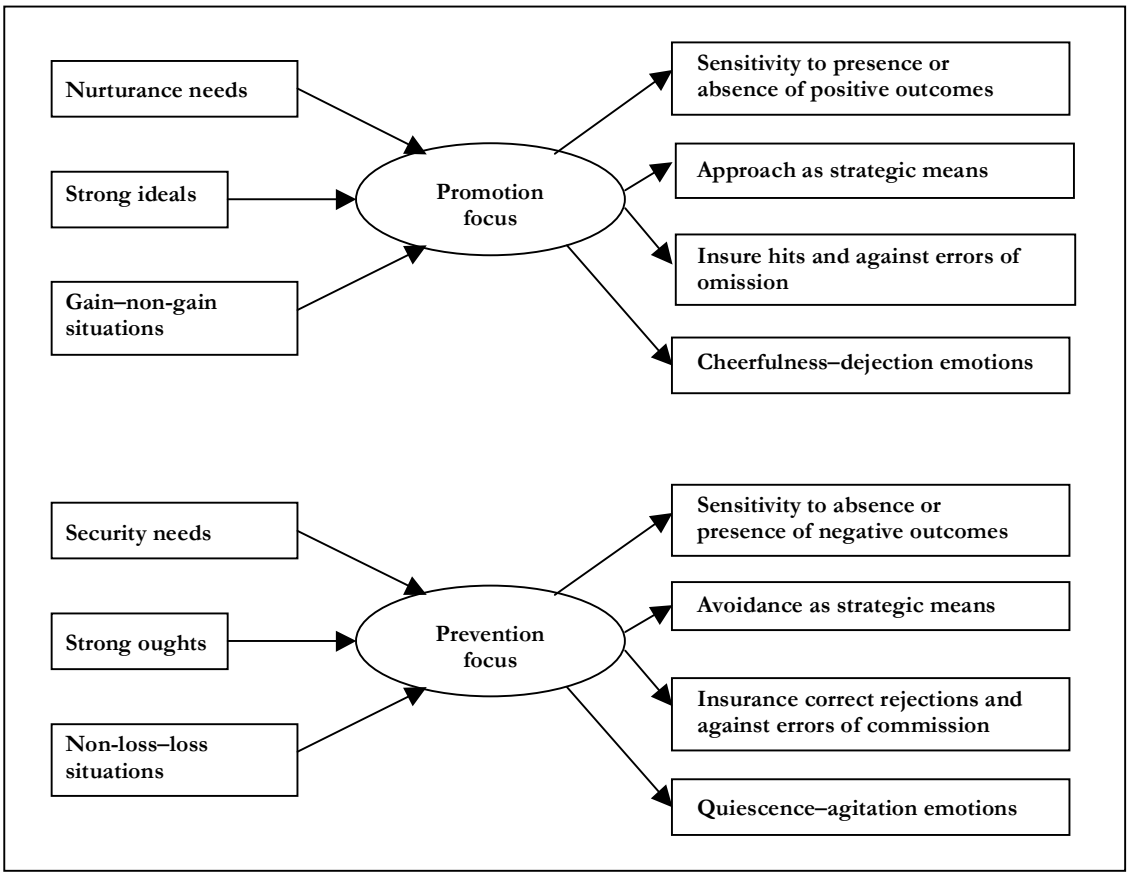

Figure 2. Distinct relations of various variables to the promotion focus and the prevention focus: Main propositions of *Regulatory Focus Theory* (after Higgins, 1997)

The distinction between the two motivational systems applies to both dispositional individual differences (potentially acquired early in life and influenced by socialization) and momentary situations (cf. Higgins & Silberman, 1998). As a measure of dispositional promotion and prevention orientation, Higgins et al. used explicit self-report in their earlier work (cf. Higgins, Klein, & Strauman, 1985). When assessed in self-report the two sub-scales of promotion and prevention focus typically exhibit a modest positive correlation (Higgins, Friedman, Harlow, Idson, Adyuk, & Taylor, 2001). In their more recent research Higgins et al. apply an implicit computer-questionnaire procedure that measures response times for generating and rating ideal and ought self-attributes (cf. Higgins, Shah, & Friedman, 1997; Shah & Higgins, 1997). This implicit measure is based on the assumption that the more important the respective

self-guide in its influence on evaluation and behavior, the more frequently it is activated and hence the more accessible, which leads to shorter response times.[10]

Higgins et al. (Higgins et al., 1997; Shah et al., 1998) showed that the promotion focus predicts approach-related behaviors, whereas the prevention focus is associated with avoidance behavior. They found that the attainment of goals associated with promotion leads to feelings of cheerfulness and joy, whereas failure leads to feelings of dejection and sadness. Achievement of goals associated with prevention, in contrast, leads to feelings of quiescence and relaxation, whereas failure leads to feelings of agitation such as nervousness. This suggests that there are differential motivational and emotional appraisal patterns underlying promotion and prevention focus (cf. Shah & Higgins, 2001).

One major aim of research on *Regulatory Focus Theory* is to investigate regulatory fit between motivational orientation and goal pursuit strategies, and its consequent effects. The proposition of regulatory fit is that motivational strength is enhanced and people "feel right" about what they are doing when they pursue a goal in a manner that matches their regulatory orientation (Higgins, 2000). Motivation in the promotion self-regulatory system is characterized by the use of eagerness means (i.e., approach means, going for "hits", avoiding errors of omission). Eager strategy fits the promotion focus in that it ensures the presence and avoids the absence of positive outcomes. Motivation in the prevention self-regulatory system is characterized by the use of vigilance means (i.e., avoidance means, ensuring against "false alarms", avoiding errors of commission). Vigilance strategy fits the prevention focus in that it ensures the absence of negative outcomes and avoids their presence. The theory assumes that people's approach and avoidance strategies work differently when serving goals with different regulatory foci and have motivational significance in their own right (cf. Crowe & Higgins, 1997).

A vast body of literature by Higgins and colleagues supports the existence as well as beneficial effects of regulatory fit. Several studies indicate that use of eager, approach strategies is more likely for individuals in a promotion focus, whereas use of vigilant, avoidance strategies is more likely for individuals in a prevention focus. Crowe and Higgins (1997), for instance, experimentally induced either a promotion or a prevention focus in younger adults and examined participants' "risky" or "conservative" bias in a task on recognition memory. They found that participants in a promotion frame preferred an eager risky bias (i.e., ensured hits and

[10] As frequency of activation is one of the characteristics for automatization (e.g., Bargh, 1994), promotion and prevention focus could also become automatic over time. This suggests that the regulatory focus has automatic aspects that can occur without conscious awareness, control, and intention. Momentary promotion or prevention focus on goal attainment is temporarily induced through feedback messages or task instructions that communicate gain/non-gain information (promotion focus) or loss/non-loss information (prevention focus; e.g., Crowe & Higgins, 1997; Shah, Higgins, & Friedman, 1998).

against errors of omission), whereas participants in a prevention frame preferred a vigilant conservative bias (i.e., ensured correct rejections and avoided errors of commission) when pursuing the task.

Another study conducted by Higgins et al. (1994) indicated that regulatory fit is reflected in better memory for the respective strategy. They used a priming technique to activate either promotion or prevention focus by asking younger adults to report either on how their hopes and aspirations or on how their sense of duty and obligations had changed over time. Then, participants read about several episodes that occurred over a few days in the life of another student. The episodes involved the target person using either the strategy of approaching a match to a goal or the strategy of avoiding a mismatch to a goal. Participants primed with the promotion focus better recalled the episodes exemplifying eager strategies (e.g., supporting a friend), whereas individuals primed to adopt a prevention focus remembered vigilant strategies better (e.g., avoiding losing touch with a friend). In addition, younger adults with a dispositional ideal-promotion focus were more likely to select friendship tactics that involved approaching matches to their goal than tactics that involved avoiding mismatches, whereas the reverse was true for participants with a dispositional ought-prevention focus.

In a similar vein, Shah et al. (1998) sampled younger adults who were either dispositionally promotion- or prevention-focused. Participants were asked to work on an anagram task, in which the goal was to identify 90% of the possible words. To manipulate regulatory focus, the authors used a promotion-framed condition that emphasized the strategy of approaching a match to the goal by telling participants that they would earn an extra dollar by finding at least 90% of the words. The prevention-framed condition emphasized the strategy of avoiding a mismatch to the goal by telling participants that they would avoid losing a dollar by not missing more than 10% of the words. As expected, individuals with a promotion focus tended to perform better with the "approaching a match" than the "avoiding a mismatch" incentive. The reverse was true for participants with a dispositional prevention focus (see also Förster, Higgins, & Idson, 1998). In sum, there seem to be regulatory focus differences in strategic inclinations for goal attainment. A promotion focus involves strategies to approach matches to goals, whereas a prevention focus involves strategies to avoid mismatches.

Two experiments by Spiegel, Grant-Pillow, and Higgins (2004) support the view that regulatory fit improves efforts at goal attainment. The first study showed that younger adults with a predominant promotion focus who adopted an eagerness strategy were twice as likely to turn in a requested report than participants with a predominant prevention focus who either adopted a vigilant or an eagerness strategy. In the second experiment, participants were asked to read either a promotion- or a prevention-framed health message. Next, they were asked to

imagine either the benefits of compliance or the costs of non-compliance to a healthy diet. Participants in the promotion condition who imagined compliance were more likely to keep to the healthy diet over the following weeks than participants who imagined its potential costs. Participants who read a prevention-framed health message, in contrast, were more likely to keep the diet when they were asked to imagine the costs of non-compliance than the benefits of compliance.

Idson, Lieberman, and Higgins (2000) showed that actual or anticipated success results in an increase in eagerness motivation but a decrease in vigilance motivation, whereas actual or anticipated failure results in an increase in vigilance and a decrease in eagerness. Thus, motivation in the promotion system is increased by actual or anticipated loss and decreased by actual or anticipated non-loss. Finally, Higgins et al. (2001) demonstrated effects of promotion pride (i.e., history of experiencing promotion as an effective self-regulatory strategy) and prevention pride (i.e., history of experiencing prevention as an effective self-regulatory strategy) on decision-making strategies and goal striving. Higher promotion pride individuals were more likely to adopt eager strategies (e.g., choosing speed over accuracy, preferring multiple means to a goal), whereas individuals higher in prevention pride were more likely to adopt vigilant strategies (e.g., choosing accuracy over speed, preferring fewer means to a goal).

Research on regulatory fit in the context of *Regulatory Focus Theory* can be linked to results reported by Brunstein et al. (Brunstein, Lautenschlager, Nawroth, Pöhlmann, & Schultheiss, 1995; Brunstein et al., 1998) on goals and implicit motives. They define four fundamental motive dispositions (power, intimacy, achievement, and affiliation) as relatively enduring preferences for broad classes of incentives. They argue that individuals are not consciously aware of their motive dispositions. In a sample with younger adults, Brunstein et al. (1995) administered projective picture-story tests to determine participants' predominance in intimacy or power motive disposition. Participants generated six goals that were, then, coded in terms of their orientation toward "agency" or "communion". Examples for agency goals are achieving feelings of mastery and independence, whereas communion goals relate to starting a partnership, for instance. Younger adults whose goals were in line with their predominant motive disposition and thus were motive-congruent (regulatory fit) indicated more positive affect than participants whose goals were motive-incongruent (no regulatory fit). Furthermore, Brunstein et al. (1998) demonstrated that perceived progress toward motive-congruent goals, as compared to motive-incongruent goals, was positively related to emotional well-being during a period of two weeks. In addition, favorable conditions for attaining motive-congruent goals predicted affective well-being over one semester. Emotional well-being, however, declined over

time when conditions for achieving motive-congruent goals were unfavorable or when participants were highly committed to motive-incongruent goals.

In sum, reviewing empirical findings supports the central assumptions of *Regulatory Focus Theory*. It shows that individuals differ in their dispositional promotion or prevention focus, and that differences in regulatory focus affect goal pursuit strategies. These differential effects on inclination of goal pursuit strategies were found for chronically as well as situationally activated differences in regulatory focus. Regulatory focus and approach–avoidance motivation seem to function together, in the sense that promotion and prevention focus identify particular goals (e.g., ideal vs. ought goals), whereas approach–avoidance motivations serve to propel behavior in the service of these goals (Förster et al., 1998). A fit between regulatory focus and goal pursuit strategies seems to be most beneficial for attaining a goal.

There are several similarities between regulatory focus and personal goal orientation as conceptualized in the present dissertation. One can argue that promotion focus relates to growth goal orientation as both are directed toward positive outcomes. Goal orientation toward prevention focus and prevention of loss, in contrast, are both directed toward negative outcomes. Moreover, in line with *Regulatory Focus Theory*, I propose that personal goal orientation comprises chronically accessible as well as situationally activated aspects. Especially when adopting a lifespan developmental perspective, conceptualizing the regulatory focus only as a dispositional, relatively stable personality characteristic would not allow the assumption that age-associated factors or life transitions and critical life events change one's regulatory focus or one's personal goal orientation. Linking lifespan theory with *Regulatory Focus Theory* and the idea of regulatory fit, one would expect that younger adults have a stronger promotion focus, whereas older adults have a stronger prevention orientation (cf. Higgins & Silberman, 1998). All studies conducted so far in the context of *Regulatory Focus Theory*, however, exclusively sampled younger adults. Whether and how older adults show the same pattern is hence unknown. Finally, *Regulatory Focus Theory* refers to the process of goal pursuit and its beneficial effects, but not to goal selection and how selecting goals with different goal orientations relate to well-being. This dissertation tried to overcome the lack of research in this field of research by explicitly addressing the question of age-related differences in goal orientation as one characteristic of personal goals as well as by examining age-related differences in the relation between goal orientation and subjective well-being.

Possible Selves: Hoped-For and Feared Selves

An alternative conceptualization of the self in the future is the construct of possible selves. Markus et al. (e.g., Cross & Markus, 1991; Markus & Nurius, 1986, 1987; Markus & Ruvolo, 1989) define possible selves as high-level order personalized mental representations of the self in the future. Possible selves are guided by experience, self-knowledge, current mood, and expectations and provide a frame for formulating concrete personal goals. As future visions or images, they reflect those elements of the self that represent what one could and would like to become (hoped-for), and what one is afraid of becoming and wants to avoid in the future. Examples of hoped-for possible selves are the healthy and fit or the successful self. Examples of feared possible selves are the dependent or the lonely self. A person can have several possible selves relating to the same or different life domains. This implies that the self is seen as a multifaceted dynamic structure containing a diverse array of self-representations. Possible selves are tailored to the individual's own hopes and fears, but they are also influenced by the socio-cultural and historical context. They are situation-responsive and dynamic and at the same time stable and contextually grounded. They can motivate behavior in interaction with changes in the environment and the person in different life phases (Cross & Markus, 1991). Thus, they guide selection processes and help to decide which domains and activities to pursue and which ones to abandon (M. M. Baltes & Carstensen, 1991).

Both interview methods and pencil-and-paper questionnaires are used to assess possible selves (cf. Hooker, 1999). In their original work, Markus and Nurius (1986) asked participants to respond to a checklist of possible selves. In most current research, respondents generate an open-ended list of their possible selves. External raters then code the generated possible selves with respect to their content and the different life domains.

Markus and Nurius (1986) describe possible selves as links between cognition and motivation. They propose two main functions: First, possible selves constitute motivators for future behavior as people aim to approach hoped-for and avoid feared states. Second, they provide an evaluative context in that they serve as an affirmation or defense of the current self. The affective evaluation of one's current self, and the satisfaction that accompanies it, depends on the surrounding context of possibilities (Cross & Markus, 1991). Imagining future selves allows the person to organize and integrate information that is relevant for the desired or undesired possible self as well as to initiate behavior in the pursuit of these consequences. The major aim is to reduce discrepancies from the current self (or increase discrepancies in the case of feared possible selves).

Several studies provide evidence of the function of possible selves as a motivator of behavior. Oyserman and Markus (1990), for instance, demonstrated that the balance of hoped-

for and feared possible selves was predictive of juvenile delinquency. Research conducted by Ruvolo and Markus (1992) showed that imagining oneself as being successful in the future (hoped-for self), as compared to imagining oneself as being unsuccessful (feared self), leads to better performance on persistence and effort tasks. It enhanced accessibility of "possible for me" responses to success-relevant words. This finding suggests that the activation of specific future self-images creates and sustains motivation and influences subsequent behavior, thereby enhancing performance.

Norman and Aron (2003) examined the cognitive basis for the motivational impact of possible selves. They found that younger adults' motivation to attain or avoid a possible self was significantly predicted by three factors: the availability of the possible self operationalized as the degree of detail in a paragraph description of the possible self, its accessibility measured by the response time to features of that possible self, and the extent to which its attainment or avoidance was perceived as under one's control.

Adopting a developmental perspective, several studies approached the relation of health-related possible selves and consequent health behaviors in younger, middle-aged, and older adults (Frazier, Hooker, Johnson, & Kaus, 2000; Hooker, 1992; Hooker & Kaus, 1992, 1994). This research suggests that health becomes increasingly incorporated into the self with advancing age. Hooker and Kaus (1994), for example, showed that health is the most prominent domain reported in both hoped-for and feared possible selves in midlife and in old age (cf. Cross & Markus, 1991; Hooker, 1992). Their cross-sectional data suggest that older people are equally likely to have hoped-for and feared health-related possible selves. Reporting a health-related possible self better predicted engagement in health-promoting and health-protecting behaviors than global measures of health values. Moreover, older adults with a health-related possible self were more likely to report engaging in more positive and fewer negative health behaviors. Looking at the specific contents of self-generated hoped-for selves indicated that they primarily referred to being able to maintain one's relatively good health.

With respect to self-definitions in an elderly sample, Freund and Smith (1999) obtained similar results. They found that the central themes in old and very old age were health and family. Participants listed more positive than negative self-defining characteristics, but the ratio of positive to negative aspects became less favorable with increasing age. Finally, positive emotional well-being was associated with more and richer self-defining domains.

Cross and Markus (1991) asked younger, middle-aged, and older adults to generate their hoped-for and feared possible selves. The contents of possible selves most frequently reflected age-graded developmental tasks that people typically face in specific phases of their lives. In general, older respondents described fewer hoped-for and feared possible selves, and these fell

within a more limited range of categories (cf. Hooker, 1992; Markus & Herzog, 1992). The ones they reported tended to be better cognitively elaborated. For older adults the hoped-for selves often reflected a desire to do more of what they were already doing, whereas younger adults included separate, distinct states to be realized.

Taken together, the research so far suggests that hoped-for and feared possible selves serve as means to motivate behavior and protect the self in the course of adult development. The findings indicate age-related differences in the content of possible selves. Negative as opposed to positive aspects of the self as well as a focus on maintaining one's functional level seem to increase in salience with advancing age. This might have been the case as the domains that possible selves refer to changed with age. To control for these age-related shifts in most salient life domains the present study investigated age-related differences in personal goal orientation separately in various life domains in addition to an in-depth investigation of cognitive and physical functioning as prototypical domains for age-associated negative resource changes. Findings on the increasing importance of health in hoped-for and feared possible selves was one of the reasons why I adopted cognitive and physical functioning as one of the specific goal contexts under investigation.

The concept of possible selves distinguishes between hoped-for and feared possible selves but does not explicitly incorporate maintenance into the theoretical framework as a dimension of its own. Results by Hooker and Kaus (1994) suggest that maintenance-related future selves often fall into the category of hoped-for selves. The present approach aims at disentangling these two dimensions and allowing for a simultaneous focus on growth, maintenance, and prevention of loss as the three separate dimensions of personal goal orientation. Finally, the definition of possible selves refers to cognitive representations of future events, whereas this dissertation investigated the motivational orientation of future and current goals and states.

Reviewing theories and empirical evidence on the various current concepts that have evolved around the basic distinction between approach and avoidance motivation suggests that they are applicable to different levels of conceptual analysis, from global motives to goals to rudimentary reflexes and neural processes. Across all these levels, the distinction between approach and avoidance motivation has theoretical and empirical utility in numerous research domains throughout the history of scientific psychology as well as in the most recent literature.

Logically, one could argue that being oriented toward approach or avoidance is symmetrical (cf. Freund, 2002; Freund & Ebner, in press). The literature on approach–avoidance motivation, however, quite consistently shows that individuals differ in their motivational orientation and that approach and avoidance motivation have differential impacts on various outcomes. In young adulthood, the primary motivational orientation is toward

approach and striving for gains (e.g., Coats et al., 1996; Elliot et al., 1997; Emmons, 1996). Approach motivation is not only more salient than avoidance motivation, but seems to be more functional with respect to various indicators of motivation, task performance, cognition, and well-being (e.g., Coats et al., 1996; Derryberry & Reed, 1994; Elliot, 1999; Elliot & Sheldon, 1997, 1998; Elliot et al., 1997; Emmons, 1996; Friedman & Förster, 2001; Gable, Reis, & Elliot, 2000; Roney et al., 1995; Updegraff, Gable, & Taylor, 2004).

The research so far, however, leaves open whether the predominant orientation and its functional impact change with age, a central topic of the present dissertation. The results obtained in prior research may reveal as less consistent and stable, when approaching them from a lifespan developmental perspective. Before introducing the present studies' conceptualization of goal orientation comprising the three developmental principles of growth, maintenance, and prevention of loss and before discussing the proposition of a motivational shift across the lifespan and outlining research supporting this idea, I briefly present the different representation levels of approach–avoidance motivation.

Approach–Avoidance Motivation Is Represented on Different Levels

Most research on approach–avoidance motivation reported so far relies on self-report measures. It assumes that people can reflect and report about their motivational orientation. Several authors, however, argue that the fundamental distinction between approach and avoidance motivation is not only represented and expressed on a conscious level as manifested in self-reports. They rather maintain that it is also reflected on an automatic and unconscious level as evident in basic motor processes (Cacioppo, Priester, & Berntson, 1993; Chen & Bargh, 1999; Förster et al., 1998; Neumann & Strack, 2000) and psychophysiological and brain processes (e.g., Davidson, Ekman, Saron, Senulis, & Friesen, 1990; Gray, 1981, 1982). They state that there are two motivational systems directing basic approach and withdrawal behavior (Bargh, 1997; Cacioppo, Gardner, & Berntson, 1997; Gray, 1990; P. J. Lang, Bradley, & Cuthbert, 1990). These approaches link the research on motivational orientation with ideas on automatic, unintentional, and uncontrollable components of behavior (cf. Bargh & Ferguson, 2000).

There is increasing evidence showing that different motor processes are associated with different motivational orientations. Arm flexion, for example, seems to be generally associated with approach orientation, whereas arm extension is generally associated with avoidance motivation. There are studies supporting differential influence of approach- and avoidance-related bodily positions on persuasion (Wells & Petty, 1980), judgments of neutral objects (Cacioppo et al., 1993; Priester, Cacioppo, & Petty, 1996), evaluation and retrieval of valenced information (Förster & Strack, 1997, 1998; Neumann & Strack, 2000; Strack & Neumann,

1996), processing styles (Friedman & Förster, 2000), the emergence of the conjunction fallacy (Riis & Schwarz, 2003), and interpersonal judgments with respect to physical attractiveness (Förster, 1998). Moreover, reviewing various studies supported the assumption that affective processing triggers motivational systems and these, in turn, activate compatible behavior. It was, for example, easier for participants to pull positive than negative items toward them as this movement implies activation of arm flexion. Conversely, it was easier to push away negative than positive items as this activates an extension of the arm (Chen & Bargh, 1999; Solarz, 1960; see also P. J. Lang et al., 1990 for influences on the blink reflex). Taken together, motor processes, albeit not consciously represented, seem to trigger differential motivational orientation and these, in turn, influence and regulate behavior.

Another representation of approach–avoidance motivation refers to the level of neuropsychological and psychophysiological correlates. Similar to research evolved around the motor-process hypothesis (cf. Cacioppo et al., 1993), this research regards the two systems of approach and avoidance as playing an integral role in basic forms of emotions and motivation in humans as well as non-human species (Davidson, 1992; Gray, 1982; P. J. Lang et al., 1990). Gray (1972, 1981, 1982), for example, holds that two general motivational, neurophysiological systems underlie behavior and emotion in response to signals of reward and threat: a behavioral activation system (BAS) and a behavioral inhibition system (BIS). BIS is the system that regulates avoidance motivation. It inhibits behavior in response to punishment and non-reward. It comprises the septohippocampal system, its monoaminergic afferents from the brain stem, and its neocortical projection in the frontal lobe. BAS is the mechanism that regulates appetitive motivation. It activates appetitive behavior in response to cues of reward, non-punishment, and escape. The neural basis of BAS is less well specified than that of BIS, though catecholaminergic, especially dopaminergic, pathways seem to play a central role (cf. Stellar & Stellar, 1985).

Neuropsychological research has produced many new insights into the biology of reward and punishment. This research has identified several different neuroanatomical structures and neurotransmitters that play an integral role in approach and avoidance processes and has highlighted the intricacy and complexity of these processes (cf. Panksepp, 1998). Empirical evidence suggests that there is a neuropsychological and psychophysiological basis for approach and avoidance motivation. Performing approach and avoidance behavior triggers different neural systems (Davidson et al., 1990; for this argument see also Cacioppo et al., 1997; Neumann & Strack, 2000). Proposing neurophysiological sensitivities as antecedents of motivational orientation constitutes an alternative to assuming that motive dispositions are the central influencing factors as is, for example, the case in the context of achievement motivation

research (see Dweck & Leggett, 1988; Elliot & Harackiewicz, 1996). Moreover, recent psychophysiological literature has linked approach- and avoidance-related emotions and motivational orientations to asymmetries in frontal cortical activity, as measured using electroencephalography (EEG; Harmon-Jones & Allen, 1997, 1998; Sutton & Davidson, 1997). Approach and avoidance is suggested to represent (at least partially) independent motivational systems located in the left and right frontal regions of the cerebral cortex, respectively (for reviews see Cacioppo & Berntson, 1994; Davidson, 1993). In line with Higgins' (1997) orthogonal crossing of promotion and prevention focus and approach–avoidance behavior, approach and a promotion regulatory focus seem to be associated with greater relative left frontal activity, whereas avoidance and a prevention regulatory focus seem to be associated with greater relative right frontal activity (Amodio, Shah, Sigelman, Brazy, & Harmon-Jones, 2004; Tomarken, Davidson, Wheeler, & Doss, 1992; see Coan & Allen, 2003, for a review). Greater left frontal activity is associated with increased approach-related positive affect and decreased avoidance-related negative affect and with increased trait levels of behavioral activation (Harmon-Jones & Allen, 1997; Sutton & Davidson, 1997) measured by Carver and White's (1994) behavioral activation scales. Research on human behavior, and specifically on human goal-directed actions, and on age-related differences in this field, however, is still very sparse or even nonexistent.

Taken together, the distinction between approach and avoidance motivation seems to be fundamental, reflected on the motor and neurophysiological level, not necessarily consciously represented, but it can have effects on intentional and unconscious levels. Based on this evidence of an implicit, unconscious representation level of motivational orientation in addition to a conscious level, the present dissertation studies adopted a multi-method design comprising two measurement types to assess personal goal orientation: self-report and preference-choice behavior. Whereas self-report implies that individuals consciously reflect about their personal goals, behavioral preference for goal orientation also covers implicit and unconscious components. Thus, evidence on the various levels of representation of approach–avoidance motivation influenced the conceptualization and assessment method of personal goal orientation in the present work.

Growth, Maintenance, Prevention of Loss: The Present Studies' Lifespan Developmental Conceptualization of Personal Goal Orientation

Drawing upon strengths and shortcomings of the current concepts of approach–avoidance motivation outlined in the paragraphs above and embedding them into a lifespan developmental

perspective, I developed a rationale for the present studies' conceptualization of personal goal orientation. The following section presents this definition.

As mentioned earlier, life-long development comprises developmental gains *and* losses in various functional domains (P. B. Baltes, 1987, 1997; Brandtstädter & Wentura, 1995; Labouvie-Vief, 1981). Moreover, life-long development can be directed toward *growth* of functions, *maintenance* of functional levels, and *prevention of loss* in the face of challenge and loss (P. B. Baltes et al., 1998; Staudinger et al., 1993; Staudinger et al., 1995). These three developmental functions can be regarded as general lifespan regulatory processes. In the sense of lifespan meta-scripts, that is theories about change trajectories across life, they can refer to various domains and life contexts at different levels of specification and can motivate specific goals. In the present dissertation personal goal orientation toward growth, maintenance and prevention of loss was not operationalized on a general level as meta-orientation but was specified on the level of specific goals. Operationalizing the concept goal-specifially defines personal goal orientation as one specific characteristic of personal goals.

The approach–avoidance distinction only differentiates between two, in some conceptualizations exclusive, motivational dimensions related to change processes. It does not imply maintenance or stabilization as additional central developmental process.[11] Based on lifespan propositions and in line with Ford (1992), who differentiates between maintenance and change orientation in addition to approach and avoidance motivation as another dimension of goal orientation, I included maintenance as a third component of goal orientation. Thus, I extended the approach–avoidance dychotomy represented in the literature and proposed three dimensions, namely personal goal orientation toward g*rowth*, *maintenance*, and *prevention of loss*. Growth goal orientation refers to gains and positive, desired change, the improvement of functions and acquiring of skills. Maintenance goal orientation covers the process that ensures stability of functional levels. Goal orientation toward prevention of loss refers to avoidance of negative, undesired change. In this sense, the present studies' conceptualization covered the aspect of no change (maintenance) in addition to positive and negative change associated with growth and prevention of loss, respectively.

Goals can lead to the attainment of multiple outcomes and serve several purposes at the same time (multifunctionality, multipotentiality; Winell, 1987). Considering this feature of goals and the idea of development as multidirectional, I maintained that goal orientation toward growth, maintenance, and prevention of loss do not represent exclusive categories along one single dimension, but rather constitute three separate components. Thus, a goal, to varying degrees, can be simultaneously directed toward these three dimensions. For instance, the goal

[11] Several motivational theories address the maintenance vs. change distinction (e.g., Adams, 1963; Brehm, 1972; Covington, 1984; Festinger, 1957; Ford, 1992; Herzberg, 1966).

"*engaging in a sports program*" can aim simultaneously at improving one's appearance (growth), staying in shape (maintenance), and not becoming overweight (prevention of loss). The suggestion that goal orientation comprises three independent aspects, is in line with the belief some behavioral researchers share that reward and punishment, and more broadly speaking, appetitive and aversive motivations are not just mirror opposites (e.g., Davidson, 1992; Elliot, 1997; Gray, 1982; Higgins, 1997; Miller, 1944).

Incorporating three separate dimensions into the concept of goal orientation allowed the investigation of their interrelatedness. In addition, it allowed the exploration of their differential relations to well-being, various related concepts of self-regulation (e.g., proactive and preventive coping), goal resources (e.g., cognitive and physical functioning), and additional goal characteristics (e.g., future orientation and importance of goals), information I additionally collected in the present studies.

Differently than Emmons (1996), the present conceptualization of goal orientation focused on goal selection but not on the direction and framing of goal pursuit strategies. It constituted a goal characteristic that is relevant when a person selects goals and was defined as referring to specific goals and goal domains. I added the term 'personal' to the concept as in the present context the participants evaluated the degree of goal orientation themselves. Specifically, respondents in the present self-report studies (Studies 1 and 2) rated the goal orientation of each of their goals. In Studies 3a and 3b, participants weighted their goal orientation toward growth, maintenance, and prevention of loss by deciding between goals with different orientations. That is, the point of reference or standard persons used for evaluating their goal orientation in this dissertation was their own subjective level. It either referred to the task (i.e., the requirements of the task itself), the past (i.e., one's own performance history), or others (i.e., the performance of others; cf. Elliot, 1999).

The validity of respondents' answers can be influenced by potentially inadequate memory or even lack of knowledge, social desirability and self-presentation, self-protective and transformational processes, individual constructions of reality, and by the wordings of questions and the context in which the question is presented, especially in reseach with older adults (cf. Schwarz, Park, Knäuper, & Sudman, 1999). To overcome these problems the present approach adopted a multi-method design to investigate the concept of personal goal orientation. It utilized self-report (Studies 1 and 2) and goal selection behavior (Studies 3a and 3b) as the two measurement types and strived for converging evidence on age-related differences in goal orientation across these assessment levels. Another reason why I measured goal orientation in preference-choice behavior in addition to self-report referred to the evidence in the literature that the distinction between approach and avoidance is represented on various levels and seems

to be relevant on fundamental implicit as well as more elaborated explicit levels (cf. Elliot & Covington, 2001). Individuals are able to explicitly communicate their goals to others, but implicit, uncontrolled influences may also play a role in directing behavior (cf. Bargh & Ferguson, 2000). In divergence to Emmons' (1996) definition of goal orientation, the present conceptualization therefore suggested that personal goal orientation implies implicit, unconscious in addition to explicit, conscious components.

Drawing upon research on *Regulatory Focus Theory*, I conceptualized goal orientation as comprising dispositional and situation-specific facets. Information on chronically accessible goal orientation was obtained by measuring self-reported goal orientation across a longer time period and by testing its stability (Study 1). Situation-specific momentary goal orientation was measured and manipulated on the behavioral level (Studies 3a and 3b).

Embedding the concept of goal orientation into the context of lifespan theory and assuming that motivational processes are strongly influenced by normative age-graded, normative history-graded, and non-normative developmental forces as well as linking it to the concept of developmental tasks, of course, raises the question about age-related changes over the life course, and if there are any, how and why? As reported for developmental tasks, there is an age-related shift not only in most salient life contexts, but also a shift from focusing on improvement and achievement of positive outcomes toward regulation of loss. Given that developmental tasks can specify and motivate personal goals, one can argue that the evidence that for younger adults goal orientation toward growth is not only more salient than orientation toward loss-avoidance but is also more functional (Coats et al., 1996; Elliot & Sheldon, 1997; Emmons, 1996; Roney et al., 1995) may not hold for older adults. Looking at the phenomenon from a developmental perspective, I proposed a shift in personal goal orientation and its functional impact from early to late adulthood. The following sections review the existent literature on age-related differences in goal orientation. It then discusses underlying mechanisms that may serve as explanations for a motivational shift in goal orientation throughout life.

Does Personal Goal Orientation Shift Across the Lifespan and Why?

One might conclude from empirical evidence on goal orientation reviewed to this point that goals should be directed toward approach and growth in order to enhance motivation, task performance, and well-being. One caveat of the studies reported so far, however, concerns the age of the investigated samples, namely younger adults, predominantly college students. It may well be that a striving for gains is only predominant and adaptive in a phase of life when there is still access to various resources and favorable opportunity structures for growth goal attainment. This is the case in early adulthood. With advancing age, however, resources in different life

domains decrease and there are fewer opportunities to realize growth (cf. P. B. Baltes & Smith, 2003). Based on this developmental proposition and in line with Staudinger et al. (1995), I argue that the predominant goal orientation changes across life. It should shift from being primarily growth-focused early in life to being focused on maintenance and loss-prevention in later life phases. Brandtstädter (1999) suggests:

> "*With increasing age, preserving action resources and counteracting developmental losses may become dominant concerns in themselves as the basic vectors of intentional self-development shift from expansion or self-actualization toward the maintenance and defense of established self-definitions.*" (pp. 55–56)

Furthermore, I maintain that the positive effects of growth orientation on various outcomes are only valid in younger ages. Older adults, conversely, profit when orienting their goals toward maintaining their functions and preventing losses. In this sense, shifting one's goal orientation from growth to maintenance and loss-prevention over the lifespan constitutes one process of adaptive developmental regulation. The following section discusses potential factors explaining this motivational shift and its age-differential beneficial impact.

Mechanisms Underlying a Shift in Personal Goal Orientation and Its Age-Differential Functional Impact

Why should there be a motivational shift across the lifespan and why should it be adaptive? What are the mechanisms underlying differences in personal goal orientation in early and late life? To respond to these questions, the next section discusses the following factors that may explain age-related differences in goal orientation: (1) age-related changes in amount, accessibility, and efficient use of goal-related resources and expected resource demands in everyday life, (2) age-graded norms and social expectations about lifespan trajectories, and (3) characteristic features of specific goal domains.

Age-Graded Changes in Goal-Related Resources and Expected Resource Demands

What is the role of age-graded changes in goal-related resources and expected resource demands in explaining a motivational shift from goal orientation toward growth to maintenance and prevention of loss over the lifespan? In the context of *SOC-Theory*, the selection principle is described as a general-purpose mechanism that generates, refines, and efficiently uses resources and aims at achieving higher functional levels. In this sense, it is a mechanism of resource generation. At the same time, it takes the fact into account that resources are finite at any given point in life so that not all goals can be pursued. Humans not only vary with respect to the amount of resources they possess but also with regard to the efficiency of their use. They are capable of budgeting and reallocating their resources with enormous relevance for their behavior, leading to desired developmental outcomes while minimizing undesired ones.

Resource generation, which implies improvement and growth of functioning, may be most prominent in early life. Resource reallocation in the face of losses within the selection principle may then become more important when loss experiences increase, as is the case in later life. Development across the lifespan proposes a negative change in the relative ratio of developmental gains to losses (P. B. Baltes, 1987, 1997). This is, for example, well documented for the domains of cognitive and physical functioning (cf. Freund & Riediger, 2001). Younger adults possess more resources and have relatively unlimited access to them and they experience more gain situations. Striving for resource gains, acquiring skills, and approaching situations that allow for generation of resources and for a maximum access to resources seem to be the primary motivation in young adulthood. Only at older ages, when individuals are more confronted with decrease and overcoming losses, are resources increasingly limited and is maintenance of functioning threatened (P. B. Baltes & Smith, 2003). The relative prevalence of conditions supporting gains decrease and situations that confront individuals with losses in their everyday life increase. The importance of protecting resources, as compared to accumulation and generation of resources as the primary goal, becomes then more crucial with advancing age (cf. P. B. Baltes, 1987, 1997; Brandtstädter, 1986, 1999; Staudinger et al., 1995).

These propositions are in line with Staudinger et al. (1995) who assume that the relative allocation of resources to the three general developmental outcomes (growth, maintenance, and prevention of loss) shifts over the lifespan. In childhood and early adulthood, the primary investment of resources is into growth. Under conditions of decline, remaining resources need to be invested in highly focused and effective manners. With increasing age, more and more resources are directed toward maintaining functions, loss-regulation, and repair (Freund & Baltes, 2000; J. Heckhausen, 1999). This motivational reorientation may constitute a necessary and wise adaptational mechanism in interacting with changes in internal and external, objective as well as subjective resources experienced across life.

To further discuss the role that goal-related resources and expected resource demands play in the lifespan shift from growth to maintenance and prevention of loss, I report research on *Prospect Theory* (Kahneman & Tversky, 1979; see also Tversky & Kahneman, 1992) and *COR-Theory* by Hobfoll (1989, 1998) (cf. Freund & Baltes, 2000; Freund & Ebner, in press). *Prospect Theory* proposes that people are loss-avoidant in that they are more willing to take a risk in order to avoid losses than to attain gains. As an explanation for the more extreme reaction of people to losses than to gains (primacy of loss-aversion), the theory suggests that the same amount of resources is subjectively valued more when framed as a loss as compared to a gain. That is, losses seem to hurt more than equal gains "feel good". The loss of ten dollars, for instance,

appears to have more subjective impact than gaining them. There are different evaluations for gains and losses, such that losses loom larger than gains. Kahneman and Tversky (1979) state:

> "*The aggravation that one experiences in losing a sum of money appears to be greater than the pleasure associated with gaining the same amount. Moreover, this…generally increases with the size of the stake.*" (p. 279)

Similarly, *COR-Theory* provides convincing empirical evidence on the primacy of loss-avoidance. It posits that people seek to obtain, retain, and protect resources. Stress occurs when resources are threatened by loss, when they are actually lost, or when individuals fail to regain resources after substantive resource investment. Resource loss is the central component in *COR-Theory*. It can lead to loss cycles with increasing strength and speed. Hobfoll (1989, 1998) argues for an asymmetry of the impact of resource gains and losses. That is, loss of resources more negatively influences well-being than do resource gains.

Studies on economic decision-making and choices over goods and money conducted in the context of *Prospect Theory* offer further support for the primacy of loss-aversion. In this context, the tendency for the stated willingness to accept payment for an object to be greater than the stated willingness to pay for the very same object has attracted attention and led to extensive research (Kahneman, Knetsch, & Thaler, 1990, 1991; Knetsch, 1989; Knetsch & Sinden, 1984). In most studies pertaining to this research, individuals are divided into two groups: sellers and buyers. The sellers are given an object (e.g., a coffee mug) and told that they are its owners. They are then asked to indicate the minimum amount of money they would accept to sell the object. Buyers are shown the same object and are asked to indicate the maximum amount of money they would be willing to pay for it. The observed asymmetry between the willingness to pay and the willingness to accept payment has been labeled the "endowment effect" (Thaler, 1980; Tversky & Kahneman, 1991). It reflects the primacy of loss-aversion and the bias toward maintaining the status quo. The theoretical idea behind this tendency to value something more simply because one owns it, is that an individual who owns the good anticipates a loss from the sale and consequently requires a higher payoff than an individual would be willing to pay to acquire the very same good. The identification with one's possessions and the degree to which one has invested resources into their attainment may be underlying this effect. Having become part of oneself as well as having had resources invested into it, the subjective value of the object is likely to increase, compared to the condition of non-ownership (see also James' (1890/1904) suggestion that personal possessions are part of one's "material self"). Being at risk for loss or the actual loss of a highly valued object then relates to threatening or even losing a part of one's self-identity and self-definition.

Applying these considerations to the domain of personal goals, one can argue that a younger person might not have invested equally intensively into his or her goals, as time for investment has been shorter for younger than for older adults. Therefore, in young adulthood

goals may not be as highly valued and might not play such an important role for self-definition. Hence, a younger person is not at risk of losing aspects of self-definition in the case of failure to achieve his or her goals, with failure being more likely for highly resource-demanding growth than for maintenance or prevention of loss goals. Therefore, a younger compared to an older person may be more willing to adopt growth goals (cf. Freund & Ebner, in press).

A phenomenon known as the "sunk cost" effect (Arkes & Ayton, 1999) combines the idea of resource investment with duration of commitment to a task or a goal. It describes the fact that the more and the longer a person has invested resources into realizing a goal, the more averse the person becomes to just give up the goal and to view these costs as "sunk costs". Ironically, people are likely to try repairing and investing even more resources into achieving the respective goal, even though more attractive and profitable alternatives might exist. Applied to personal goals, the longer a goal has been pursued and the more resources have been invested into its achievement, the stronger the tendency for maintenance and status quo should be. As the motivation to maintain a goal is related to its past resource investment, it might become more difficult to distance oneself from goals the more one has invested into them and the longer one has already held them. And this is more likely the case for older than for younger adults as they are more likely to have already been committed to their goals for a longer period and have consequently invested more resources into goal attainment.[12]

Research conducted in the context of *Prospect Theory* and *COR-Theory* supporting the primacy of loss-aversion has primarily sampled younger adults. Arguing from an evolutionary standpoint as well as from a developmental perspective, however, raises the question if human beings of all ages and under all conditions are primarily loss-aversive. To possess as many resources as possible is of evolutionary advantage (cf. Freund & Riediger, 2001). Resources are essential for reproductive success and survival. They signal success, relative social standing, and good genetic material to potential mates. They enhance attractiveness and successful reproduction and provide for the upbringing of offspring (Buss, 1999). Especially in young adulthood accumulation of resources appears to be a primary motivation and at least as important as maintaining them and preventing decreases. Moreover, before younger adults can start protecting and conserving resources, they need to acquire skills and resources and build upon their status. They might have large potentials. These, however, need to be translated into resources and actual outcomes. Raynor (1982) notes that younger adults are in the process of "becoming" while older people see themselves as "having been". Younger adults cannot maintain things they never had or prevent these from being lost. Rather, they have to acquire them first. Older adults, conversely, have already achieved much throughout their lives. They

[12] Kovalchik, Camerer, Grether, Plott, and Allman (2003), however, did not find significant support for age-related differences in the endowment effect.

might have less potential than younger adults to start with, but have already built upon their status and accumulated resources and skills that need to be protected. In late adulthood, preserving acquired resources and counteracting losses may become the primary motivation outweighing tendencies to accumulate new resources (e.g., P. B. Baltes, 1997; Brandtstädter & Wentura, 1995; Freund et al., 1999; J. Heckhausen et al., 1989, Staudinger et al., 1995). This reallocation of resources toward maintenance of functioning and loss-prevention may be facilitated by the tendency of individuals to prefer avoidance of loss over enhancement of gains (Hobfoll, 1989; Kahneman & Tversky, 1984).

How can the idea and the empirical support for a general primacy of loss-aversion be combined with the proposition of an age-associated motivational shift from growth to maintenance and prevention of loss? Studies conducted in the context of *Prospect Theory* very explicitly point out the threatening losses and potentials for gains related to the specific tasks or scenarios under investigation. From a lifespan developmental viewpoint one can argue that older adults, as they are often confronted with losses, are chronically aware of potentials for resource losses and are informed about the expected resource demands of a goal (i.e., resources a person expects to invest to achieve a specific goal). Younger adults mainly experience gain situations. Therefore they may not be constantly aware of potential losses. The present research approach maintains that making younger adults explicitly aware of threatening losses with respect to specific goals should influence their goal orientation in favor of adopting maintenance of functions and loss-prevention as their primary orientation instead of striving for gains.

In accord with *OPS-Theory*, individual's developmental regulation reflects the specific constraints and opportunities encountered in a given developmental ecology. Aging-related challenges are characterized by increasing and ultimately inescapable constraints and losses in the potential for attaining growth and in terms of the risks of decline in functioning. This process is particularly pronounced in advanced old age. At increasing age, individuals typically become aware of these aging-related threats and decline (J. Heckhausen et al., 1989). Such awareness of lowered growth potential and reduced control over personal development at least in some areas of life (see also J. Heckhausen & Baltes, 1991) should then give rise to changes in the preferred motivational orientation.

An alternative suggestion refers to empirical evidence showing that throughout life, people become increasingly flexible with respect to their goals (Brandtstädter & Renner, 1990; J. Heckhausen, 1997). Older adults more easily give up goals that are unattainable and redirect their resources to goals that are realistic and can be reached with the resources available. As they have lived longer, they could have more experience in realistically judging the availability of their resources than younger adults. In this sense, they are more attuned to the resources they have

available when setting and pursuing their goals. Instead of risking depletion of resources when investing into highly resource-demanding growth goals, older adults are assumed to prefer investing their resources into maintaining functional levels and resource protection.

On the basis of these theoretical considerations, the present studies expected younger adults to primarily focus on growth and older adults to orient their goals toward maintenance and prevention of loss in self-report (Studies 1 and 2) as well as on the behavioral level (Studies 3a and 3b). When manipulating the information on expected resource demands of goals by making respondents aware of the fact that growth goals require more resources than maintenance and prevention of loss goals, I hypothesized that both age groups would show a behavioral preference for maintenance and loss-prevention (Studies 3a and 3b).

Several authors argue that changing one's goal standards to an attainable level is highly adaptive (Brandtstädter & Greve, 1994; Wrosch & Heckhausen, 1999). This can include flexibly and adaptively re-evaluating one's original goals, restructuring one's goal-hierarchy, disengaging from formerly set goals, or shifting one's goal orientation from growth to maintenance and prevention of loss in accordance to available resources and opportunity structures such as in loss-based selection (Freund & Baltes, 2000). These processes become especially important when losses in resources are pervasive (e.g., in old age) which makes the attainment of higher-standard goals impossible (P. B. Baltes & Baltes, 1990; Brandtstädter & Renner, 1990; Freund & Baltes, 2000; J. Heckhausen & Schulz, 1995). Therefore, a shift in motivational focus allows adaptive responses to losses in resources without further depletion of remaining capacities and prevents the need to give up a specific goal.

As a person typically holds multiple goals, and as goals can be interrelated, the loss of one goal can have negative consequences on other, related goals and resources that are gained through this goal. For instance, the goal of exercising regularly may be positively related to the goals of becoming healthier and of engaging in activities with friends (cf. Riediger, 2001). Moreover, Staudinger and Freund (1998) found that selecting few life domains on which to focus was particularly adaptive for older people who were confronted with constraints in resources. At the same time, selection of domains on which to focus one's resources also has costs because it implies that other alternative possibilities cannot be chosen. In this sense, being able to continue the pursuit of a specific goal by changing one's goal orientation in the sense of loss-based selection as proposed in the context of *SOC-Theory* rather than abandoning the specific goal may be highly functional and constitutes one mechanism for successful aging.

Based on these assumptions, the present research hypothesized that shifting one's goal orientation constitutes a regulatory mechanism to successfully adapt to lifespan changes in resources. Consequently, the functional impact of the three dimensions of goal orientation

should change from young to late adulthood. Goal orientation toward growth, maintenance, and prevention of loss should be differentially associated with subjective well-being (general as well as goal-specific) in younger and older adults. As young adulthood is characterized by favorable opportunity structures for growth and enhancement and younger adults possess the necessary resources to pursue and achieve growth goals, growth goal orientation should be positively related to general subjective well-being and goal satisfaction in early life. Goal orientation toward maintenance and prevention of loss, conversely, should be negatively associated with general well-being and goal-specific satisfaction in this age group. These associations, however, should not hold in later adulthood. Due to increasing limitations in resources and more favorable opportunity structures to pursue and realize maintenance of functioning and loss-prevention in late life, a negative relation between growth goal orientation and subjective well-being should be observed. The relations with goal orientation toward maintenance and prevention of loss, in contrast, should be positive.

Age-Graded Social Expectations and Subjective Theories About Developmental Change

Do age-graded social expectations and subjective theories about developmental change constitute mechanisms underlying a motivational shift from goal orientation toward growth to maintenance and prevention of loss over the lifespan? Expectations, beliefs, or mental representations can be seen as guiding forces for behavior and action (Bandura, 1986). Subjective beliefs about the life course, the ontogenetic future, and lifespan changes can be linked to behavior implicitly or explicitly directed by individuals at their own and others' development (Brandtstädter, 1984a; Lerner & Busch-Rossnagel, 1981). Personal beliefs about development can, for example, refer to theories about which aspects of personality, social, and intellectual functioning are sensitive to developmental change at any period throughout life, the degree of desirability of these characteristics, and expectations about onset and closing time as well as peak expression of the expected characteristics and changes (cf. J. Heckhausen et al., 1989).

From a sociological perspective, normative expectations of the life course are established primarily by societal structure (e.g., Featherman & Lerner, 1985; Hagestad & Neugarten, 1985). This approach implies that societal structure provides directional timetables of ontogenesis. From a psychological perspective, such social forces are expected to result in a consensus among individuals about the desirability and timing of developmental phenomena across the life course. Examples of this line of research are the study of age and cohort norms (e.g., Neugarten et al., 1965) and of negative aging stereotypes (e.g., Brewer, Dull, & Lui, 1981; Green, 1981; Hummert et al., 2002; Kite & Johnson, 1988).

Age-graded social beliefs are stongly related to developmental tasks as proposed by Havighurst (1956). They inform about age-graded opportunity structures and goal-relevant resources, about the appropriate timing and sequencing of goals. Several studies demonstrate that individuals tend to primarily set their goals in domains that are most relevant for the major developmental tasks of their specific age and that are characterized by the most favorable age-related opportunity structure (Cross & Markus, 1991; J. Heckhausen, 1997, 1999; Nurmi, 1992; Rapkin & Fischer, 1992; Riediger, 2001; Salmela-Aro, Nurmi, Aro, Poppius, & Riste, 1993). Thus, social expectations and developmental tasks proved important for the selection of specific goals and goal domains (e.g., Cantor, 1994; Freund, 2003; J. Heckhausen, 1999; Nurmi, 1992). In addition, they might also be important for the specific goal orientation younger and older adults adopt. Age-related opportunity structures could be more favorable for a younger person who pursues growth goals, as this is normative. For an older person to strive toward gains may be less normative. It seems rather age-appropriate to strive for maintenance and loss-prevention in old age. Less normative goal orientations might reduce chances for goal attainment with potentially negative consequences on well-being.

Furthermore, older adults live with less clearly defined social expectations of what goals should be pursued than do younger adults (Atchley, 1982; Maddox, 1994; Riley, Kahn, & Fohner, 1994; Waterman & Archer, 1990; Wrosch & Freund, 2001). Social expectations of what goals are relevant and most appropriate to pursue are relatively clear in young adulthood (Neugarten et al., 1965; Nurmi, 1992; Settersten & Hagestad, 1996a, 1996b). That is, there are socio-cultural and age-graded social expectations, which are reflected in age-normative conceptions and opportunity structures (J. Heckhausen, 1999; Wrosch & Heckhausen, 1999). Old age, in contrast, is a time of greater flexibility and freedom to develop and define personal goals. Social norms and duties decrease in several life domains and sociocultural expectations of "appropriate" goals are less pronounced in later phases of life. Of course, this does not mean that an older person exists outside of age-graded norms and social-cultural expectations. In late life, however, these normative aspects influence goal selection and pursuit to a lesser degree than in earlier life (Freund et al., 1999).

The less clearly defined norms in old age allow older adults to be more flexible than younger adults in selecting goals with different goal orientations, in accordance with available resources and under less normative pressure. It may be easier for them to disregard highly growth-oriented goals and rather to select goals that are directed toward maintenance and loss-prevention. Taking these considerations into account, age-graded social expectations and stereotypes about old age and aging may play a role in explaining younger adults' stronger

orientation toward growth and the increasing salience of maintenance and prevention of loss with advancing age.

The Role of Specific Goal Domains

As outlined earlier, developmental tasks and personal goals can refer to different life contexts. Several studies quite consistently demonstrated that individuals select goals in accordance with age-related structures of their life course and developmental tasks (Cross & Markus, 1991; J. Heckhausen, 1997; Nurmi, 1992; Rapkin & Fischer, 1992; Riediger, 2001; Salmela-Aro et al., 1993; Staudinger, Freund, Linden, & Maas, 1999; Wiese, 2000). Younger adults most frequently mention goals that are related to education, career, family and personal development. Middle-aged adults are most engaged in occupation, children, and property. Goals most frequently generated by older adults refer to leisure, health, retirement, family, and world issues.

Lifepan theory proposes that development is a multidimensional phenomenon. That is, lifespan development is not equal across life domains, but very different as a function of specific contexts. The ratio of developmental gains to losses and the availability of goal-related resources vary for different life domains (cf. P. B. Baltes & Smith, 2003). As reported earlier, the domains of cognitive and physical functioning, for example, show prototypical decline trajectories, whereas other domains (e.g., social relationships, emotion regulation) offer potentials for stability and growth until old age.

Based on these considerations, the present dissertation assumed that domains in which resource gains outweigh resource losses seem to be more predestined for a goal orientation toward growth, whereas the more losses a person experiences in a specific life domain, the more he or she should focus his or her goals on maintaining functional levels and counteracting further losses in this goal context. This should be the case for younger and older adults. The present research assumed there to be domains in which younger and older adults did not differ with respect to their goal orientation as they equally experience gains and losses in these contexts (e.g., friends, partner, family) or because these domains are not primarily characterized by age-graded decline but provide a potential for growth until late in life (e.g., leisure).

Using sentence completion responses, a study by Timmer, Steverink, and Dittmann-Kohli (2002) explored personal anticipations of possible gains, maintenance, and losses in a sample of middle-aged and older adults. They found that anticipated gains primarily included positive changes in life style and leisure time. To a large extent, anticipated maintenance referred to physical and behavioral resources and also to life style. Anticipated losses, finally, were related to concerns about external living conditions and physical decline. This suggests that the focus on

growth, maintenance, or prevention of loss might change as a function of specifics of selected life contexts.

The present dissertation aimed at controlling for age-related differences in the selection of specific domains and their influence on personal goal orientation. Therefore, I examined age-related differences in goal orientation in two specific domains, namely cognitive and physical functioning. These specific domains were selected as they are both characterized by increases in loss-related experiences with advancing age. At the same time, however, improvement is possible through training until relatively late in life (cf. P. B. Baltes & Smith, 2003). Another purpose of the dissertation was to identify goal contexts in which age-related differences in goal orientation did not exist. For this reason, I measured goal orientation in various self-generated goal domains separately (e.g., family, health and well-being, finances and personal belonging, leisure) in addition to assessments in the domains of cognitive and physical functioning.

Age-Related Differences in Personal Goal Orientation and Age-Differential Functional Impact

Does being young imply a stronger focus on growth, and growing old means a change from goal orientation toward growth to maintenance and prevention of losses? Moreover, is goal orientation differentially related to well-being in younger and older adults? So far, only few studies have addressed these questions.

Dittmann-Kohli (1995) used sentence-stems to assess younger and older adults' most important life domains and themes. She found that younger adults strongly focused on the future and generated positive outcomes with respect to the domains of work and family. Older adults, in contrast, mainly generated themes related to their past. Older adults' few future-related statements primarily referred to threatened physical decline and its consequences (e.g., illness, dependence, need for help) and to the hope of maintaining their status quo. These results suggest that, in addition to age-related changes in future orientation when generating life themes, younger and older adults also differ in their orientation toward achievement of positive outcomes, maintenance of status quo, or prevention of negative consequences.

In a self-report study by J. Heckhausen (1997), younger, middle-aged, and older adults were asked to list their most important personal hopes, plans, and goals for the next five to ten years. Based on the respective goal domain, independent external raters coded each goal either as an approach or an avoidance goal. Work-related goals, for example, were coded as approach goals, whereas health-related goals were coded as avoidance goals. As expected, J. Heckhausen found that, compared to middle-aged and older adults, younger adults generated more goals in domains coded as approach-oriented and striving for developmental gains. Older adults, in contrast, named more goals in goal domains categorized as pertaining to avoidance of losses and

fewer aimed at gains. Interestingly, middle-aged adults listed more goals in goal domains coded as avoidance-oriented than younger adults. This suggests that the orientation toward avoiding developmental losses is already salient in middle adulthood. In sum, this study provides evidence for an age-related increase in orientation toward avoiding losses instead of striving for gains as the primary orientation (cf. J. Heckhausen et al., 1989).

Wrosch and Heckhausen (1999) examined goal orientation in the partnership domain in early and late middle-aged adulthood. The same coding procedure as in the study by J. Heckhausen (1997) was used to categorize the self-generated goals as ones with an approach or an avoidance orientation. Recently separated adults in late midlife generated fewer approach-oriented goals than separated younger adults. In contrast, recently committed adults in late midlife listed more goals oriented toward loss-avoidance and fewer directed at growth. The authors discuss this shift in goal orientation with respect to passing developmental deadlines and decreasing objective probability of remarriage expectancies after divorce in late midlife as compared to early adulthood.

All three studies suggest that the shift in personal goal orientation across life might be strongly linked to age-related changes in the focus on specific life domains. Coding personal goals as either approach or avoidance goals on the basis of the respective goal domain, provides a first valuable, but relatively rough indication of personal goal orientation. This procedure bears the risk of confounding age-related changes in most prevalent goal domains with age-related changes in motivational orientation. As reviewed earlier, the importance of specific goal domains changes across the lifespan (Cross & Markus, 1991; Nurmi, 1992; Riediger, 2001; Salmela-Aro et al., 1993). The domain of health, for example, is not only more prevalent in older than in younger ages, it could also be more related to maintenance of functioning and overcoming losses than the domain of work and work-related activities. To disentangle these two potential sources of age-related change, the present approach asked participants to list goals relating to freely chosen life contexts in addition to the domain-specific assessment of goals related to cognitive and physical functioning.

The studies by J. Heckhausen (1997) and Wrosch and Heckhausen (1999) only distinguish between approach and avoidance motivation and conceptualize these as two exclusive poles on one dimension. The present research, in contrast, defined goal orientation as a three-dimensional construct incorporating growth, maintenance, and prevention of loss, and allowed for a simultaneous orientation toward all three aspects.

Ogilvie, Rose, and Heppen (2001) applied a more direct and extended assessment of age-related differences in goal orientation. In two interview studies, adolescent, middle-aged, and older participants were asked to generate their personal goals and to indicate their reasons for

being involved in the respective goal. These purpose statements were then coded into one of four motivational categories by independent raters: (1) the motivation to acquire (i.e., the intention to obtain a future positive outcome; growth orientation), (2) the motivation to keep (i.e., the intention to avoid losing an existing positive condition; maintenance orientation), (3) the motivation to cure an existing negative condition, and (4) the motivation to prevent a negative outcome (i.e., prevention of loss orientation).[13, 14] The orientation toward acquiring positive outcomes reflected the highest percentage of purpose statements in adolescents, middle-aged, and older adults. Its prevalence, however, declined from early to middle to late adulthood. In addition, the motivation to keep existing positive states was more characteristic for older adults than for adolescents or middle-aged adults. Unexpectedly, Ogilvie et al. did not reveal consistent age-group differences with respect to the motivation to cure an existing negative condition or the orientation toward preventing negative outcomes.

Comparable to the studies by J. Heckhausen et al. (J. Heckhausen, 1997; Wrosch & Heckhausen, 1999) Ogilvie et al. (2001) categorized goals as oriented toward one of the motivational dimensions, assuming that any given goal can represent only one goal orientation. Moreover, they also relied on external categorization of goal orientation and focused on assessing goals on the self-report level. The present research extended these approaches by asking younger and older adults to subjectively evaluate each goal with respect to its orientation toward growth, maintenance, and prevention of loss. This procedure allowed weighting each of the three motivational orientations in relation to the others. In addition, it overcame problems of external categorizations of personal goals such as missing information about the subjective motives and purposes underlying the respective goals. Finally, as exclusively relying on self-report data has several shortcomings (cf. Schwarz et al., 1999) and to cover more implicit components of personal goal orientation, I assessed behavioral preference for goal orientation by observing respondents' goal selection behavior.

In a study by Ryff (1991), young and middle-aged adults saw improvement in themselves from the past to the present on six dimensions of psychological functioning (i.e., self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth). This reflected a sense of personal progress in younger adults. The elderly, however, indicated largely a perception of stability with prior levels of psychological functioning. Ratings with respect to future states showed that younger and middle-aged adults expected

[13] As proposed in the context of operant conditioning, these four motivational purpose statements refer to the four reinforcement principles that occur immediately after a given behavior: Positive reinforcement (acquire), positive punishment (prevent), negative reinforcement (cure), and negative punishment (keep). This distinction implies a 2 (positive vs. negative) x 2 (existence vs. absence) framework (Ogilvie & Rose, 1995; see also Higgins, 1997).

[14] Pilot work suggested that participants had difficulties understanding and appropriately responding to the category of *motivation to cure an existing negative condition*. For this reason and on theoretical considerations, I dropped this dimension.

continued gains in the years ahead, whereas the oldest respondents foresaw decline on several aspects of well-being (e.g., personal growth, environmental mastery).

Thus, Ryff (1991) investigated future perceptions about improvement and decline of subjective well-being in different age groups, to my knowledge, however, so far, no study has explicitly investigated age-differential associations between goal orientation and motivation, task performance, or well-being. A set of studies conducted by Freund (2002), however, aimed at exploring age-differential motivational effects of goal orientation on goal pursuit (not goal selection behavior). These studies also explored the role of experienced resource limitation as an underlying factor. Younger and older participants engaged in a simple sensorimotor task. The task comprised two conditions. In the optimization condition, participants were asked to maximize their performance in the sensorimotor task. Two weeks later, in the compensation condition, a loss of goal-relevant resources was induced in that participants were confronted with a dysfunctional lever that impaired task performance. Again, respondents were instructed to solve the task as well as possible. Participants were free to quit the task at any time point. Persistence in the task served as the dependent variable indicating motivation for goal-directed behavior. Results supported the hypothesis of a preference for compensatory efforts in older adults and for optimization strategies in younger adults. Younger adults worked more persistently on the task in order to achieve higher levels of performance than when trying to maintain performance in the same task in the face of loss. Conversely, older adults showed higher persistence in the task when confronted with loss than when the same task addressed improving their performance.

Freund (2002) thus demonstrated age-differential motivational effects of pursuing optimization vs. compensation goals. One limitation of these studies, however, was that the sensorimotor task presented to participants was very trivial and highly artificial. One aim of the present dissertation was to replicate and expand the findings reported by Freund in an ecologically more salient context, to apply them to goal selection instead of goal pursuit, and to start filling the gap in research on age-differential associations between goal orientation and well-being. In addition, instead of assigning goals to participants, I asked younger and older adults to generate their personal list of goals (Studies 1 and 2) and to actually select their personal goals relating to cognitive or physical functioning in the laboratory context (Studies 3a and 3b) to obtain converging evidence across measures.

In sum, this evidence on age-related differences in goal orientation and its age-differential functional impact as well as theory and evidence on the concept of developmental tasks and their impact on the selection of age-appropriate personal goals (e.g., J. Heckhausen, 1999; Nurmi, 1992) suggest a shift in motivational preference from early to late adulthood that is in

line with main propositions of lifespan theory (P. B. Baltes, 1987, 1997; Brandtstädter, 1986) as well as models on active and successful life-management (Brandtstädter & Renner, 1990; Freund & Baltes, 2000; J. Heckhausen & Schulz, 1995). Younger adults appear to be more inclined to strive toward gains and are less motivated to set and pursue goals that are related to regulation of resource losses. Their central motive is to acquire skills and approach situations that allow a maximum access to resources. Older adults' primary motivational orientation, conversely, seems to be directed toward preservation of acquired resources and to persist in efforts to maintain performance when faced with losses. The next section sums up the theoretical background that led to my central research hypotheses.

Summary of the Theoretical Background and Central Research Questions

One main proposition of lifespan developmental psychology is that life-long development comprises both gains *and* losses in all phases of life (P. B. Baltes, 1987, 1997; Brandtstädter & Wentura, 1995; Labouvie-Vief, 1980, 1982). Moreover, it is multidirectional in that it is oriented toward growth, maintenance, and prevention of loss (P. B. Baltes et al., 1998; Staudinger et al., 1995). Due to age-related changes in objective and subjective internal and external resources, the ratio of gains to losses is dynamic across the lifespan (P. B. Baltes, 1987, 1997). Gains outweigh losses in early adulthood, while losses become more and more prominent and resources are increasingly threatened in later life. The domains of cognitive and physical functioning serve as prototypical examples of these increasingly less positive lifespan trajectories (cf. P. B. Baltes & Smith, 2003; Freund & Riediger, 2001). Other domains such as social relationships and emotion regulation, however, offer potentials for stability and growth until old age. In addition to age-related changes in resources, subjective theories about lifespan trajectories that can be understood as meta-orientations of development across life reflect these theoretical propositions on age-related changes in the ratio of developmental gains to losses (cf. J. Heckhausen et al., 1989). This gain–loss dynamic provides changing opportunities and constraints for individual development across the lifespan.

Assuming a flexible and adaptive interplay between the person and his or her environment allows the introduction of age-graded, normative history-graded, and non-normative factors (P. B. Baltes et al., 1980) as interacting developmental forces and developmental tasks (Havighurst, 1956) as organizing principles of the direction and the level of development. Developmental tasks constitute socially shared expectations that can be internalized by the individual. They influence goal selection and pursuit and thus structure the individual life course (e.g., J. Heckhausen, 1999; Nurmi, 1992).

Within the constraints determined by biological, social, and personal factors individuals can be viewed as active agents of their own life trajectories through the selection and pursuit of personal goals (Brandtstädter & Lerner, 1999; Ford, 1987; Freund & Baltes, 2000; Lerner & Busch-Rossnagel, 1981). To fully understand the notion of active life-management, lifespan developmental propositions and action perspectives need to be integrated in highlighting the role of goal-related resources, goals, and goal-directed actions and their interaction for development.

Successfully balancing resource gains and losses as one indicator of adaptive development over the lifespan can result from this interplay. The *SOC-Theory* constitutes a general theoretical framework that describes the processes of resource generation and allocation through investment into goal-related processes as adaptive mechanisms of successful aging (P. B. Baltes & Baltes, 1990; Freund & Baltes, 2000). The model proposes that by setting and pursuing personal goals individuals can actively influence the direction of development (selection), the level of functioning (optimization), and the maintenance of functioning in the face of losses (compensation) within physical, social, and personal constraints. The *SOC-Theory* provides the theoretical background of the present dissertation, with its specific focus on one facet of personal goals, namely personal goal orientation.

Personal goal orientation can be regarded as a general subjective theory about lifespan trajectories and developmental change (cf. P. B. Baltes et al., 1998; Staudinger et al., 1993; Staudinger et al., 1995). The conceptualization of goal orientation in the present context drew upon the fundamental distinction between approach–avoidance motivation. It specifically referred to the motivational direction of personal goals. Thus, I operationalized personal goal orientation goal-specifically. This conceptualization implies that personal goals can focus on (1) *growth*, (2) *maintenance*, and (3) *prevention of loss* of functioning as three separate components of developmental regulation.

Previous research on goal orientation has almost exclusively been conducted with younger, college student samples. These studies showed that in early adulthood, the motivational orientation toward approach and striving for gains is predominant and adaptive (Coats et al., 1996; Elliot et al., 1997 Emmons, 1996; Roney et al., 1995). To my knowledge, very few studies so far have looked at age-related changes in goal orientation. And none has explicitly investigated age-related differences in the associations between goal orientation and subjective well-being and thus explored its role for successful developmental adaptation or identified factors underlying age-related differences. The present dissertation tried to fill this gap by approaching the concept of personal goal orientation from a developmental perspective.

Integrating lifespan developmental and action perspectives suggests that personal goal orientation is dynamic and can change across life. Potentially underlying mechanisms of differences between younger and older adults regarding orientation toward promoting gains, maintaining functions, and preventing losses refer to age-related differences in resources and expected resource demands, age-graded social expectations about developmental trajectories or negative aging stereotypes, and characteristic features of specific life domains.

The few studies that have approached the question of age-related differences in goal orientation suggest that there is a motivational shift from growth to maintenance and prevention of loss across life (J. Heckhausen, 1997; Ogilvie et al., 2001). Empirical evidence shows that subjective theories about lifespan changes reflect theoretical propositions on age-related changes in the ratio of developmental gains to losses (J. Heckhausen et al., 1989). These findings are also in line with studies about the negative aging stereotype (e.g., Green, 1981; Hummert et al., 2002; Kite & Johnson, 1988). These subjective theories may underlie the proposed primary orientation toward growth in younger adulthood and the primary orientation toward maintenance and prevention of loss in late life (cf. J. Heckhausen et al., 1989). Additionally, actual experience of age-related changes in resources may play a role. On average, younger adults experience more gains and possess more goal-relevant resources than older adults. Only in late life do resource limitations become increasingly salient (cf. P. B. Baltes & Smith, 2003; Freund & Riediger, 2001). As a consequence, it may become more and more relevant and beneficial for older adults to invest their increasingly limited resources into goals directed at maintenance and prevention of loss instead of growth goals (Staudinger et al., 1995).

Taken together, the present research hypothesized that younger adults should be highly motivated to expand their abilities and maximize their potentials and performance. That is, they should have a primary orientation toward growth. In late life, the unfavorable balance of gains to losses should motivate elderly individuals to orient their goals in the direction of maintenance and loss-regulation. They should be primarily motivated to conserve their functioning, preserve what was achieved in prior years, and avoid losses. Figure 3 graphically presents these theoretical assumptions.

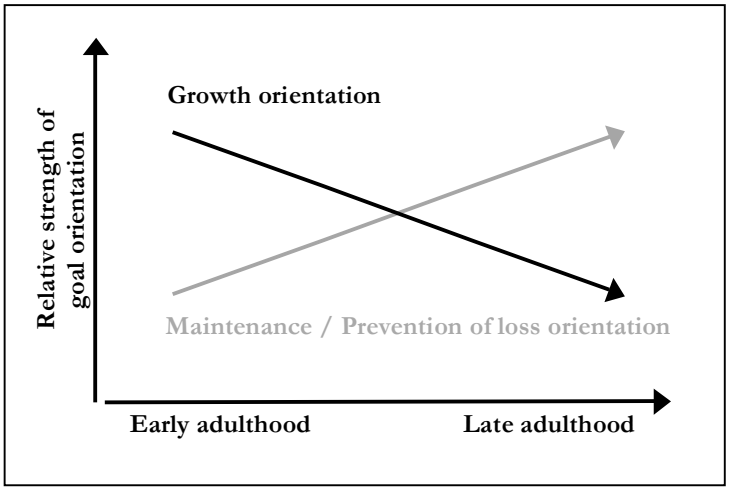

Figure 3. Hypothesized shift in personal goal orientation from early to late adulthood

I expected to find these age-related differences in personal goal orientation across self-generated goal domains as well as in two specific functional domains, namely cognitive and physical functioning. There were various reasons why these two specific domains were selected. One purpose was to allow the control for age-related shifts in the most prominent life domains (cf. Nurmi, 1992), when investigating age-group differences in goal orientation. Another reason was that both domains show prototypical age-related changes (P. B. Baltes & Smith, 2003). They are characterized by age-associated negative decline but, at the same time, offer potentials for gains through exercise and training until old age. Furthermore, I proposed that age-related differences in goal orientation could be replicated across types of measurement as personal goals can be expressed on various levels. In addition to self-reported goal orientation, goal orientation in preference-choice behavior of younger and older adults was assessed.

To date it is unclear if the consistently reported positive relations of growth goal orientation and negative relations of goal orientation toward prevention of loss and well-being also hold for older adults. My dissertation therefore examined age-related differences in the relations between personal goal orientation and general subjective well-being as well as goal-specific satisfaction. By doing so, I tried to clarify the role of shifting one's goal orientation from growth to maintenance and prevention of loss over the lifespan as one component of successful life-management. I argued that the positive relation between growth goal orientation and well-being should not exist in late adulthood because older adults' goal-relevant resources decline and their opportunity structures for goal attainment become less favorable. The pursuit of growth goals would then put pressure on older adults and negatively impact on their well-being. Rather, old age should be characterized by a positive relationship of subjective well-being and

goal orientation toward maintenance as well as prevention of loss and a negative relation of subjective well-being and growth goal orientation.

Finally, the dissertation aimed at the investigation of the role of expected resource demands as a factor underlying age-related differences in goal orientation. I argued that research supporting the primacy of loss-aversion always ensures that participants are aware of threatening losses and resource limitations in a specific task or situation (cf. Hobfoll, 1989, 1998; Kahneman & Tversky, 1979). Adopting a lifespan developmental viewpoint, I maintained that older adults are chronically aware of threatening resource losses as they are often confronted with losses and their resources become increasingly limited. Younger adults, however, typically have access to sufficient resources. They are primarily motivated to maximize their skills and may not constantly be aware of resource limitations and threatening losses. My expectation was that when growth and maintenance or prevention of loss goals were described as demanding equal amounts of resources, younger adults should show a primary goal orientation toward improvement of functioning. Older adults, in contrast, as they experience losses frequently during everyday life, may always be aware of impending losses of resources and should therefore primarily orient their goals toward maintenance and prevention of loss. Making younger adults explicitly aware of threatening losses with respect to specific goal-relevant resources, however, should influence their goal orientation in the direction of maintenance and loss-regulation. Thus, when growth goals were described as demanding more resources than maintenance or prevention of loss goals, and making individuals explicitly aware of threatening losses when pursuing growth goals, both age groups should show a primary orientation toward maintaining their status quo and preventing decrease.

In short, the dissertation studies addressed the following three main research questions:

(1) Do younger adults primarily orient their personal goals toward growth, whereas older adults focus on maintenance and prevention of loss in their personal goals?

(2) Is there an age-differential pattern in the associations between goal orientation and subjective well-being?

(3) Do expected resource demands of goals influence the preference for goal orientation toward growth or maintenance and prevention of loss in younger and older adults?

I approached these three research questions utilizing a multi-method research design (see Table 1). It comprised four studies examining independent samples and varying in assessment level and goal context. One purpose of Study 1 was to describe the concept of personal goal orientation in regard to the three dimensions of growth, maintenance, and prevention of loss. Furthermore, using a self-report questionnaire, Study 1 investigated age-related differences in goal orientation of self-generated goals and examined the age-group differences in the

correlational pattern between goal orientation and subjective well-being. Information on goals across multiple goal domains as well as with respect to cognitive and physical functioning was gathered in this study. Study 2 also administered self-report measures in order to replicate the general pattern of results on age-related differences in goal orientation. It used a more parsimonious conceptualization of personal goal orientation that only included two components, namely growth vs. maintenance–prevention of loss. This study exclusively referred to goals in the domain of cognitive and physical functioning. Studies 3a and 3b adopted the same conceptualization, but took an experimental approach to describe age-related differences in the goal orientation of preference-choice behavior. These studies explored the role of expected resource demands as one of the factors underlying age-group differences in goal orientation. Study 3a referred to the domain of cognitive and Study 3b to the domain of physical functioning. Table 1 presents the multi-method research design of the present dissertation.

Table 1. *Overview of the Multi-Method Research Design*

Study	Sample	Assessment	Goal domain
Study 1: Self-reported personal goal orientation I			
	$n_{younger} = 49$ $n_{older} = 41$	Self-report questionnaire	Self-generated domains, cognitive functioning, physical functioning
Study 2: Self-reported personal goal orientation II			
	$n_{younger} = 50$ $n_{older} = 52$	Self-report questionnaire	Cognitive functioning, physical functioning
Study 3a: Behavioral preference for personal goal orientation (Cognitive functioning)			
	$n_{younger} = 55$ $n_{older} = 58$	Preference-choice behavior, self-report questionnaire	Cognitive functioning
Study 3b: Behavioral preference for personal goal orientation (Physical functioning)			
	$n_{younger} = 52$ $n_{older} = 49$	Preference-choice behavior, self-report questionnaire	Physical functioning

Notes. In Study 1, younger respondents ranged between 18.2–26.0 and older respondents between 65.1–84.3 years of age. In Study 2, younger respondents ranged between 18.1–25.1 and older respondents between 64.4–86.0 years of age. In Study 3a, younger adults were between 18.7–28.2 and older adults between 64.1–84.3 years of age. And finally, in Study 3b, younger adults ranged between 18.93–30.96 and older respondents ranged between 60.0–86.1 years of age.