1 INTRODUCTION

Over the entire life span, humans are repeatedly confronted with events and changes that challenge or threaten successful developmental regulation (e.g., social conflict, physical or mental illness, transitions into new social roles, loss of significant others). These occurrences may be expected or unexpected, temporary or lasting, preventable or not, modifiable to some extent or unchangeable conditions. Unless they affect basic human conditions necessary for the survival of the organism, the variation of individual responses to them is enormous.

From a transactional perspective, individuals differ in the extent to which they are exposed and susceptible to such psychosocial risks (Rutter, Champion, Quinton, Maughan & Pickles, 1995), in their perceptions and evaluations of them, as well as in their attempts to deal with them (Lazarus, 1991). From a developmental perspective, the encounter with and successful mastery of adverse situations are regarded as necessary antecedents of developmental growth (Heckhausen, 1999). Even the experience of loss is an integral component of development, providing opportunities for self-observation and self-knowledge (e.g., Aldwin, 1994; Levenson & Crumpler, 1996; Holahan, Moos, & Schaefer, 1996). Moreover, it has been proposed that the dynamic between gains and losses is inherent in any developmental process and that successful development is characterized by the maximization of gains and minimization of losses (P.B. Baltes & M.M. Baltes, 1990). In that sense, adapting to new challenges and managing adverse situations and losses are two major aspects of developmental regulation throughout all life stages (Heckhausen, 1999).

The present thesis is concerned with adaptation and resilience in middle-aged and elderly adults. The concept of *resilience* has been introduced as a framework for the study of successful adaptation under adverse life circumstances that – considering the mean level – set individuals at higher risk for maladaptive outcomes than those who are not exposed to such circumstances (e.g., Garmezy, 1974; Rutter, 1987; Werner & Smith, 1982). More recently, researchers adopted the concept to study developmental phenomena and processes in later stages of life (Staudinger, Marsiske, & P.B. Baltes, 1995). It has become part of a new research tradition that has replaced the traditional deficit model of old age, accounting for the increasing number of empirical findings showing that far into old age, people are able to maintain or regain levels of successful adaptation in different domains of functioning (well-being, social relationships, autonomous lifestyle), even under circumstances of severe adversity or loss (Pinquart, 1997; Staudinger et al., 1995).

Recent reviews of the literature on childhood and adolescent resilience (c.f., Masten, 2001) have corrected one of the misconceptions of early resilience research: the notion, that successful adaptation under extreme circumstances requires extraordinary characteristics and resources. Rather, there is converging evidence that resilience usually results from ordinary, normative functions, resources and self-regulation processes (e.g., being connected to competent and caring adults, generating opportunities for success, maintaining a positive view of the self, placing oneself in healthy contexts). In fact, it seems that developmental problems are most likely to persist only when these basic human adaptational systems are impaired prior to or as a consequence of adversity.

Is this notion of the ordinary rather than the magic in resilience also true for midlife and old age? Do correlates of resilience change, as people get older? Life-span theory suggests that the coexistence of stability and change is common in almost all domains of functioning (P.B. Baltes, 1987, 1997). This applies to the nature of risks as well as internal and external resources possibly needed to overcome these risks (e.g., cognitive resources, self-regulation, social networks). For example, severe health problems may affect individuals at all ages. At the same time, every life period has its own, specific developmental challenges, resulting from a unique constellation of biological changes, role transitions, and common life events (e.g., Havighurst, 1953; Neugarten, 1990; Heckhausen, 2001; see **Error! Reference source not found.**). Research has shown that aside from common age and cohort differences in living contexts and developmental tasks, some self-regulation tendencies in dealing with these challenges are increasingly employed as people get older (e.g., Brandtstädter & Renner, 1990; Freund & P.B. Baltes, 1998; Heckhausen & Schulz, 1999), and common resources are not necessarily equally adaptive at all stages in life (e.g., Lang & Heckhausen, 2001; Isaacowitz & Seligman, 2002).

However, systematic studies comparing positive adaptation under normal developmental circumstances to positive adaptation under various kinds of severe stressors in midlife and old age are rare. In addition, there are several shortcomings in empirical research on age differences in the *level* of psychosocial resources and self-regulation skills, as well as their *adaptivity* (Heckhausen, 2001):

1. The first empirical deficit pertains to a strikingly small number of studies directly comparing young, middle-aged and elderly adults on the same measures, either cross-sectionally or longitudinally.
2. Even more rare are studies on age differences in specific subgroups of young, middle-aged and elderly adults facing *comparable* life events and stressors. This kind of research is

needed if one wants to determine whether age differences occur as a consequence of the different kinds of stressors that adolescents, middle-aged and old people have to deal with, or reflect "true" age-related changes in resources and individual attempts of dealing with stressors.

3. A third deficit lies in the analysis of age comparisons of *mechanisms* underlying successful adaptation. Although much theoretical work is concerned with internal mechanisms of the regulation of emotions and goals (e.g., Brandtstädter & Renner, 1990), we still know more about what regulation tendencies adults report to engage in *generally* (in the sense of generalized and dispositional tendencies) than about what they actually do or report to do in a well-defined situation.

The present research was designed to compare elderly adults and a highly selective sample of middle-aged adults, who face two types of stressors typically encountered in the elderly: sensory (vision) impairment and the co-occurrence of chronic diseases (multimorbidity). An empirical study was conducted to (a) examine potential correlates of resilience in these adults, and (b) analyze age differences in psychosocial resources, self-regulation strategies and selected criteria of adaptation, their interrelations and their associations with the two selected health stressors.

For this purpose, visual impairment due to cataract was chosen as an example of a health stressor with increased incidence in the later life-period that affects both middle-aged and older adults. Although cataract is most prevalent beyond the age of 65 (Prevent Blindness America, 1998), it does occur at younger ages as well. Furthermore, recent studies have found that in middle-aged patients, cataract is associated with an increased prevalence of chronic illnesses (as compared to their reference age group) and even a reduced life expectancy (Knudsen, Baggesen, & Naeser, 1999; McKibbin, Mohammed, James, & Atkinson, 2001), independent of whether cataract surgery is performed or not (Meddings et al., 1999). This has lead researchers to the conclusion that the occurrence of cataract in midlife may be regarded as a marker for *premature ageing*, reflecting generalized tissue aging and a general deterioration of health.

A second health stressor was selected for comparison within the study population: the joint occurrence of multiple chronic diseases (multimorbidity). This again is a characteristic of the general health status that is common in old age, and less common in midlife (e.g., Verbrugge, Lepkowski, & Imanaka, 1989). In the present study population, however, chronic diseases and multimorbidity were expected to be more prevalent than usual in the middle aged, because of their positive association with the incidence of cataract. Thus, on average,

middle-aged and older participants were expected to face a comparable degree of health stress in this particular sample.

The purpose of the study is twofold.

(1) First, the resilience paradigm is applied for a systematic comparison of adaptation under low risk (i.e., low visual impairment and low multimorbidity) and adaptation under high risk (more severe visual impairment and multimorbidity). Two indicators of adaptation are chosen: cognitive-emotional adaptation (general well-being and depressive symptoms) and functional adaptation in everyday life (perceived difficulty in the pursuit of activities). Psychosocial correlates of resilience are examined in a setting where individuals face (a) chronic stress due to visual impairment and multimorbidity, (b) deal with a short-term stressful event (cataract surgery) and (c) subsequently adapt to changes in vision after surgery. For heuristic purposes, the psychosocial variables examined here are divided into those that reflect rather stable and generalized attitudes, expectations and perceptions (resources) and those that are closer to the processes and mechanisms underlying developmental adaptation (self-regulation strategies).

Resilience is operationalized as positive adaptation under high risk (in this case, high multimorbidity and vision impairment). Both variable-centered as well as person-centered analyses are performed. In the variable-centered analyses, the degree of health stress is treated as a moderator variable, testing the assumption that the associations of selected resources and self-regulation strategies with the criteria of adaptation are *stronger* in face of more severe health stress (*buffering* effect hypothesis). This assumption is based upon a contextual perspective on chronic stress, which entails the idea that the effects of resources such as social support and dispositional optimism are especially salient when they are *needed*, and bring about differences in behavior, self-regulation, and choices, which are more likely to result in either positive or negative outcomes under stress. From a developmental perspective, however, the more interesting question is whether resilience is associated with *shifts* in resources and self-regulation strategies. It is often pointed out that the successful mastery of adverse situation is associated with the positive changes in generalized expectations, such as self-efficacy and optimism (e.g., Bandura, 1997). Furthermore, in the encounter with chronic stressors such as the ones focused here, problem-focused coping strategies aimed at altering the situation have little impact, and emotion-focused strategies might be more promising (Weisz et al., 1994). Thus, shifts in coping strategies might occur when these are successfully implemented (Holahan, Moos, & Schaefer, 1996). Likewise, chronic stressors are likely to

restrict the pursuit of important personal goals, thus changes and refinement of goal regulation strategies (e.g., reconsideration of priorities, substitution or devaluation of goals, selectivity in goal pursuit) might be triggered (e.g., Brandtstädter, 1998). In sum, these theoretical considerations support the notion that *crisis growth* under stress is possible and does occur (Holahan, Moos, & Schaefer, 1996).

To test the assumption that chronic health stress might be associated with changes in resources and self-regulation strategies, person-centered analyses are performed, where "resilient" individuals (those with positive adaptation in the high risk condition) are identified and compared to non-resilient adults, as well as well-adapted individuals with less severe health problems.

Based on existing empirical findings from various research traditions (e.g., life event research, coping research, gerontology), it is predicted that resilient individuals in the present context should have a level of personal and social resources that is higher than in non-resilient individuals. More importantly, in comparison to the well-adjusted individuals facing no or low chronic stress, resilient individuals are assumed to exhibit stronger *emotion-focused* coping strategies in dealing with the event of surgery, higher levels of *accommodative* goal adjustment, and higher *selectivity* in investing their energy and in the pursuit of activities.

(2) Second, the study is concerned with the direct comparison of middle-aged (40 - 65 years), "young old" (66 – 75 years) and old (> 75 years) cataract patients. It is reasoned that differences in adaptation between these three groups in the present setting are importantly influenced by two developmental factors: the degree of *normativity* of the selected health stressors and the degree of *functional reserve capacity*.

In the present sample, individuals differ in the degree to which the stressors they face are representative for their respective age group. According to their incidence in the general population, the two selected health stressors can be viewed as *normative* events in the young old and old, and *non-normative* events in the middle-aged.

According to life-span psychology, non-normative events are important factors in human development (P.B. Baltes, 1987). It has been postulated that critical life events affect development to the extent to which they cut down opportunity structures for the individual and in that sense interfere with the pursuit of personal goals (Brandtstädter & Greve, 1994). In the case of non-normative life events, these changes might be more critical because they are unexpected, and often force the individual to adjust to a restricted range of opportunities in a relatively short period of time. Furthermore, successful role models in the close environment

are usually rare and for downward social comparisons and downgrading, often cited as major self-regulation strategies to maintain a positive sense of the self (Filipp, 1990; Heckhausen & Brim, 1997), new reference groups or categories have to be established. In addition, a lack of established institutional support in the environment designed for the specific needs of adults who face "off-time" events (e.g., functional disability and need for care in midlife) might enhance the need for refined self-regulatory skills (Wrosch & Freund, 2001; Wrosch, Heckhausen, & Lachman, 2000).

Following these considerations, and assuming that visual impairment and the simultaneous presence of chronic somatic diseases repeatedly expose individuals to stressful experiences in their daily lives (e.g., pain, distorted vision, difficulty in the pursuit of activities), the overall prediction is made that, prior to surgery, middle-aged cataract patients have greater problems in accepting the situation and regulating their emotional adaptation than young old and old patients. These problems should be reflected in lowered well-being, greater overall subjective impairment and a higher frequency of depressive symptoms in middle-aged patients. Furthermore, they are expected to experience more difficulties in the pursuit of activities related to work and leisure, as in midlife, expectations with respect to functioning in these domains are high.

In contrast, it is expected that the oldest participants (> 75 years) experience greater difficulty in the pursuit of activities of daily living (ADL) and instrumental activities of daily living (IADL) than the two other age groups. This prediction is based on the assumption that functional reserve capacities reach their limits in old age (e.g., M.M. Baltes, 1998, P.B. Baltes, 1997; Smith & Baltes, 1997). Empirical research has shown that intrinsic regulatory mechanisms in face of chronic health problems may alleviate negative emotional consequences, but not the consequences of a general decline of sensori-motor functions in old age (Ketcham & Stelmach, 2001), which is strongly associated with everyday life competence and the ability to maintain an independent lifestyle (M.M. Baltes, Maas, Wilms, Borchelt & Little, 1999; P. B. Baltes, 1997).

The young old participants are assumed to show the highest adaptational level in all domains, since they are not yet experiencing the full range of biological constraints of old age, and at the same time are not any more subject to the high societal expectations of midlife functioning.

The situation after surgery is assumed to represent a different context characterized by the experience of *gain* in an important resource domain (vision). It is hypothesized that all age groups will – at least temporarily – benefit from this in terms of their well-being. On the

behavioral level, however, a temporary increase in activity difficulty is expected for the oldest participants, because of their reduced adaptive capacities in functional domains.

In sum, the present thesis focuses on three concepts of adulthood development: normative vs. non-normative conditions, reserve capacities, and the notion of growth under crisis.

In the following chapter, the theoretical background upon which the predictions of the present study were built is outlined. First, conceptual issues in the study of resilience are reviewed. Then, models of development in midlife and old age are outlined and age-graded changes and non-normative events, cognitive-emotional and functional reserve capacities, as well as the special case of health stressors in these life periods are discussed. The next part of the chapter provides a selective overview of empirical data on correlates of resilience in midlife and old age. This focuses on two developmental aspects: age differences in the *level* of the proposed correlates, and age differences in their *adaptivity* in different contexts. A special emphasis lies on (a) the *mechanisms* involved in adjustment processes, in addition to the internal and external resources that are related to positive adaptation, and (b) studies in the field of health-related stressors. Finally, the setting of the present study is introduced.