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WELL-BEING IN OLD AGE:
CROSS-SECTIONAL AND LONGITUDINAL ANALYSES

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In: "Motivation, Consciousness and Self-Regulation"
Editor: D. A. Leontiev

ISBN: 978-1-61324-795-2 2012

Chapter 10

**PERSONALITY DETERMINANTS OF SUBJECTIVE
WELL-BEING IN OLD AGE:
CROSS-SECTIONAL AND LONGITUDINAL ANALYSES**

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ABSTRACT

Theories of aging consider subjective well-being (SWB) as a global indicator of sane psychological adjustment to life tasks and for successful aging. The present study is concerned with (a) SWB, (b) various personality variables, and (c) the influence these personality determinants have on SWB in old age. Participants were 259 females and 134 males ranging from 63 to 84 years of age at the first measurement wave. The sample was subdivided into three age cohorts: 63 to 68 (n=139), 69 to 72 (n=133), and 73 to 84 years (n=121). Three hundred and twenty-five participants were re-interviewed almost five years later.

SWB is usually conceived of having a cognitive as well as an affective component, both of which were assessed. Personality variables included personal agency (self-efficacy, externality, hopelessness), motive dispositions (achievement, power, affiliation), coping strategies (accommodative flexibility, assimilative persistence), goal variables (goal commitment, goal attainability, goal probability), and subjective health perception.

Results confirmed findings of SWB research, according to which SWB is at a rather high level, even in old age. Males indicated greater life-satisfaction and more positive affective well-being than females. The predictor variables formed a coherent pattern of four factors: (1) Assertiveness (persistence, achievement and power motives), (2) goals (commitment, attainability, probability), (3) flexibility, subjective health, (low) hopelessness, (low) externality, and (4) affiliation motive. Self-efficacy had equal substantial loadings on both the assertiveness and flexibility factors. This means that individuals with a strong sense of efficacy have both assimilative and accommodative coping strategies at their disposal. The association of subjective health with flexibility shows that individuals who are capable of adjusting their aspirations to age-related constraints feel less impaired by health restrictions. Gender differences relate to higher personal agency (self-efficacy, low hopelessness, low externality) and higher

assertiveness (persistence, achievement, power) of males. However, there were no gender differences concerning accommodative flexibility and subjective health, and males and females were equally highly committed to their goals. There were distinct age-related changes: Personal agency, assertiveness and goal probability decreased, but the decline only began in the middle-age cohort and was mostly pronounced in the oldest cohort (age 78 upwards). The phase after entry into retirement was characterized by a rather high stability of personality, whereas a terminal decline occurred only in the oldest age. These results support the differentiation between a “third” and “fourth” age. Generally, goal commitment increased and subjective health decreased during the interval between the two measurement points.

Regression analyses on the impact of the predictor variables on SWB revealed (low) hopelessness as being the main predictor of both life satisfaction and affect. Beyond that, cognitive and affective well-being were influenced by *different* predictors. Self-efficacy and flexibility had the highest impact on life satisfaction, especially in the youngest age cohort. However, in the oldest cohort, the most influential predictor of life satisfaction was the success probability of attaining personal goals. Affective well-being, in contrast, was mainly influenced by subjective health perception in all cohorts.

Longitudinal analyses revealed that during the five-year interval, our participants’ life satisfaction *increased*, whereas affective well-being *decreased*. These differing developmental trends could be explained by different predictor variables. Again, feelings of hopelessness had a detrimental effect on both changes in cognitive as well as in affective well-being. Beyond that, the increase in life satisfaction was mainly due to the ability to flexibly adjust one’s own aspirations to reduced resources and, therefore, strive for achievable goals. The decrease in affect, in contrast, was primarily caused by poor subjective health.

Keywords: Subjective well-being, old age, personal goals, personal agency, self-efficacy, coping strategies, motive dispositions, subjective health, developmental changes in personality

INTRODUCTION

Increasing life expectancy is a well-known fact—at least in Western countries. The future of our society will be characterized by a rising proportion of old and very old people. This development is characterized as being a demographic revolution, and it indeed presents a challenge to society, mainly for social policy but also for various scientific disciplines (e.g., medicine, sociology, psychiatry, and not least, psychology). Thus, a new conceptualization of aging and a new way of dealing with the aged is needed. The stated aim is a society in which people in *all* stages of life will have a fair chance of fruitful development and of living a fulfilled life.

Subjective well-being (SWB) is a core variable in research on aging; it is understood as a global indicator of sane psychological adjustment to life tasks and successful aging (P. B. Baltes & Mayer, 1999). SWB is an important component of the quality of life because it is based, in contrast to “objective” measures (e.g., income, socioeconomic status, marital status), on an individual’s own appraisal. People react differently to the same circumstances and, therefore, SWB estimates rely on individual’s own standards and signal their beliefs of what is important in their lives.

Although most aged people live in satisfactory life circumstances (at least in Germany, where this study was conducted), growing old entails the risk of impairments including reduced material resources, declining physical health and intellectual functioning, loss of intimates, social isolation, social dependency. Nevertheless, nearly all studies confirmed that life satisfaction shows no decline with age (Diener, Suh, Lucas, & Smith, 1999; Diener & Suh, 1998; Halisch & Geppert, 2000, 2001; Smith, Fleeson, Geiselmann, Settersten, & Kunzmann, 1999).

The discrepancy between objective life conditions and subjective well-being appraisal points to a well-known finding of well-being research generally, the “paradox of subjective well-being” (Staudinger, 2000). This paradox describes the fact that even under adverse circumstances (a) most people are happy, and (b) the empirical mean of SWB is usually in the positive range. It is an often-reported fact that objective life conditions and situations affect the level of SWB to a moderate degree only; even facing extreme events, people show few long-term changes in their SWB (Diener & Diener, 1996). Many studies have shown that this pertains to individuals, groups, or even nations—irrespective of real disadvantages or discrimination (Diener et al., 1999)—and it has repeatedly been proved that these findings cannot be explained as a methodological artifact (Staudinger, 2000).

In the light of these findings, the focus of SWB research has shifted from an initial quite popular *bottom-up approach* in which SWB is explained by circumstances, events, and contexts to a *top-down approach* in which the role of individual differences in personality is emphasized (Brief, Butcher, George, & Link, 1993; Feist, Bodner, Jacobs, Miles et al., 1995; Headey, Veenhoven, & Wearing, 1991; Heller, Watson, & Ilies, 2004). Bottom-up theories maintain that SWB is derived from a summation of pleasurable and unpleasant experiences. In other words, satisfaction and happiness result from having many specific moments of happiness in life and a happy individual is happy because he or she experiences many happy moments. Consequently, this theoretical perspective conceives of life satisfaction as the result of a summation of satisfaction in a number of particular domains (e.g., family life, marriage, financial situation, and housing).

Alternatively, top-down theories assume that people have a general propensity to interpret life experiences in either positive or negative ways, and this predisposition in turn colors their evaluation of life satisfaction. From a top-down perspective, our subjective interpretation of events, rather than the objective circumstances themselves, should be the primary influence on SWB. The main proposition of this approach is that stable personality characteristics determine levels of SWB. Individuals who are happy are happy because they enjoy life's pleasures and not primarily because they experience more of them in an objective sense. Despite pleasant or unpleasant circumstances, some individuals seem to be happy people and others, unhappy people.

In an extensive meta-analysis, Heller et al. (2004) came to the conclusion that both the person-centered and also the situation-centered approach have their merits, and the best model would be an integrative perspective combining features from both the top-down and the bottom-up perspective. They were able to show that although personality plays a key role, situational factors are also important, and according to their view, “personality places some limits (i.e., a reaction range) on the level of life satisfaction people can experience; within this broad range, changes in people's environments, perceptions, feelings, and behaviors can increase or decrease their level of satisfaction” (p. 593).

The Concept of Subjective Well-being

Subjective well-being is usually viewed as a concept consisting of three components, namely pleasant affect, unpleasant affect, and life satisfaction. According to Diener and Lucas (1999, p. 213), SWB “refers to people’s evaluations of their lives. These evaluations include both cognitive judgments of life satisfaction and affective evaluations of moods and emotions.” In this classification, *life satisfaction* represents a global cognitive evaluation or judgment of an individual’s satisfaction with his or her life. It is an evaluative summary that people have of their lives. Moods and emotions, on the other hand, which together are labeled *affect*, represent people’s on-line evaluations of events that occur in their lives. They are reflections of people’s actual affective experiences.

Although the concept of life satisfaction is theoretically different from the amount of positive or negative affect a person experiences, life satisfaction and affect are nevertheless interrelated. When making estimates of life satisfaction, for example, people may rely on current mood as an indicator of their overall satisfaction, or they simply reflect on the amount of time they have spent in a happy versus an unhappy mood. On the other hand, current emotion theories suggest that cognitions play a major role in the experience of emotion. Therefore, cognitive evaluations of one’s life may determine the amount of positive and negative affect an individual experiences. Findings of several studies established the convergent and discriminant validity of both components of SWB (Lucas, Diener, & Suh, 1996; Schimmack, Radhakrishnan, Oishi, Dzokoto, & Ahadi, 2002; Schimmack, Schupp, & Wagner, 2008). There is convincing evidence that SWB is a multidimensional construct with cognitive and emotional components that are related but neither philosophically nor empirically identical. Moreover, affect is not a unitary construct with positive and negative endpoints along a one-dimensional scale. Instead, positive and negative affect are two independent types of emotion that are correlated to a moderate degree only and sometimes show different relations with external variables (Bradburn, 1969; Diener & Emmons, 1984; Diener, Smith, & Fujita, 1995; Heyl, Wahl, & Mollenkopf, 2007).

Personality Determinants of Subjective Well-being

Literature reviews often conclude that personality is a stronger predictor of SWB than environmental factors (Diener & Lucas, 1999; Diener et al., 1999; McCrae, 2002). Heller et al. (2004, p. 575) summarize the findings of the top-down approach with the conclusion that “well-being is a product of internal or subjective processes (e.g. goals, temperament) rather than of objective external factors (e.g. income, education).” In contrast to personality variables, demographic variables, as, for example, income, marital status, job status or even objective health, usually correlate less than .20 with SWB (Diener, Lucas, & Scollon, 2006).

Personal Agency

In a meta-analysis of studies on personality traits and SWB, DeNeve and Cooper (1998) reported that the personality constructs relating to sense of control and personal agency were among the most potent personality correlates of subjective well-being. Individuals with a strong belief in controlling and mastering goals and tasks in their everyday lives probably feel

happy and satisfied. Having a sense of control and personal efficacy has indeed consistently been shown to improve well-being through the life cycle (Bandura, 1997; Lachman, Rosnick, & Röcke, 2009). Peterson (1999) concluded that a sense of control is a key protective factor for SWB in the face of declining health and other losses in later life, and Berg, Hassing, McClearn, and Johansson (2006) showed that a sense of being in control of one's life is important for well-being, even for the oldest old.

There are three key personality variables related to personal control, namely self-efficacy, externality, and hopelessness. *Self-efficacy* is a well-known personal agency construct introduced by Bandura more than 30 years ago. It refers to an individual's perceptions about his or her own capabilities to organize and implement actions necessary to attain designated goals (Bandura, 1977, 1997). The cornerstone of self-efficacy is the expectation of being able to execute desired behaviors successfully. According to Bandura, self-efficacy is a prerequisite of well-being throughout the lifespan. In later life, which is characterized by a depletion of resources due to multiple losses, individuals with high self-efficacy manage rather easily to cultivate new relationships and engage in productive activities, both of which contribute to positive functioning and well-being. Recently, Charrow (2006) confirmed that self-efficacy is a strong predictor of SWB in old age.

Compared to self-efficacy, *hopelessness* and *externality* are broader expectancy constructs. Whereas self-efficacy is focused on domain-specific or even act-specific expectancy, hopelessness (Beck, Weissman, Lester, & Trexler, 1974), which bears a close resemblance to the dispositional optimism/pessimism construct by Scheier and Carver (1992), is related to generalized expectancies that good or bad things will happen in one's life. The construct of generalized externality is based on Rotter's concept of internal versus external locus of control (Rotter, 1966). Externality refers to a tendency to attribute important life events to external and, therefore, uncontrollable factors. Individuals with an external locus of control believe that luck and powerful others determine their fates. Holding negative expectations for the future (hopelessness or pessimism) and perceiving one's own development as mainly influenced by external factors that are beyond personal control (externality) have detrimental effects on subjective well-being (e.g., Queen & Freitag, 1978; Scheier & Carver, 1992).

Motive Dispositions

A large number of studies have proved the motive dispositions of achievement, power, and affiliation motives, known as the motive triad, play a prominent role in most human goal-directed behavior (J. Heckhausen & Heckhausen, 2008; McClelland, 1985). There is some evidence that in old age, the importance of both the achievement and the power motive diminishes (McClelland, Scioli, & Weaver, 1998) and that correlations with life satisfaction are only moderate (Jacob & Guarnaccia, 1997). However, motives exert a special indirect influence on SWB. Well-being is negatively affected when there is incongruence between implicit and self-attributed motives (Baumann, Kaschel, & Kuhl, 2005; Langan-Fox, Sankey, & Canty, 2009; Langens, 2007) or between motives and personal goals (Brunstein, Schultheiß, & Gräßman, 1998; Hofer, Chasiotis, & Campos, 2006). Halisch and Geppert (2001) related events their participants experienced within the last six months to motives and found that the absence of affiliation- and power-related events had a detrimental influence, and the presence of achievement-related events had a positive influence on SWB.

Coping

A third set of variables relates to self-regulatory mechanisms (J. Heckhausen, 1999; J. Heckhausen & Dweck, 1998) and coping strategies (Brandtstädter, Rothermund, & Schmitz, 1998; Brandtstädter, Wentura, & Rothermund, 1999). Becoming old has been described as a life task in which individuals have to adjust their goals and aspirations to age-related constraints and restrictions in order to maintain personal continuity and self-esteem. Brandtstädter and Renner (1990) distinguished two coping strategies that aim to eliminate distressing discrepancies between actual situations and desired self-states, namely *accommodative flexibility* and *assimilative persistence*. Accommodative flexibility (or flexible goal adjustment) describes a tendency to positively reinterpret initially adverse situations and to relinquish blocked goal perspectives easily. It aims to eliminate such discrepancies by adjusting personal goals and preferences rather than by changing the actual situation. Assimilative persistence (or tenacious goal pursuit), in contrast, refers to an individual's tendency to tenaciously pursue goals even in the face of obstacles. It aims to change an unsatisfactory situation so that it becomes compatible with desired self-definitions or identity goals. According to Brandtstädter, both strategies may operate simultaneously in a given situation. Several studies have proved the importance of accommodative and assimilative coping for successful aging (Brandtstädter et al., 1998; Brandtstädter et al., 1999; Heyl et al., 2007). Both strategies can have a positive influence on SWB, but one can assume that with increasing age, shifting from assimilative to accommodative coping will benefit SWB.

Goals

Goal theories of human behavior maintain that setting and striving to achieve goals plays a central role in human development over the lifespan. Setting and pursuing future-oriented goals influence an individual's well-being, even in old age (Brunstein, Schultheiß, & Maier, 1999). Although there is some evidence that simply having valued goals can increase life satisfaction (Emmons, 1986), at present most researchers agree that high investment in the pursuit of personal goals does not necessarily produce positive well-being. According to Brunstein et al., (1999, p. 170) "... to achieve high levels of well-being, it is important for an individual to have both a strong sense of commitment to valued goals and a life situation that provides favorable conditions for the attainment of these goals." Accordingly, it is not sufficient to have goals, but goals have to be estimated by the individual as attainable. Moreover, Brunstein et al. (1998) showed that not all goals are equal in producing high SWB. Only progress in achieving goals that are thematically congruent with motive dispositions leads to high SWB. Adopting a method developed by Brunstein (1993), we asked our participants for goals they pursue and had them estimate their goal commitment, goal attainability, and goal probability.

Health

Finally, health seems to play an important role in SWB. There is, however, a remarkable discrepancy between the thinking of laypersons and the actual empirical results concerning the effects of health on SWB. No one would query the inclusion of health as an important factor, and we all know from talking with older people that health becomes even more

important with age. Accordingly, Campbell, Converse, and Rodgers (1976), for example, found that health was rated by Americans as the most important factor in happiness. However, all pertinent studies revealed a surprisingly low correlation between health and SWB (cf. Diener et al., 2006). The key to explaining this puzzling fact is to take into account *subjective* health perception instead of objective health (Brief et al., 1993). Although subjective health certainly reflects objective health to some degree, it is also colored by individual interpretations (Pinquart, 2001). The crucial factor is the individual's perception and interpretation of health-related restrictions and not the objective health restrictions. Therefore, we added a measure of our participants' *subjective health perception* to the list of predictor variables.

To summarize, the present study is concerned with (a) subjective well-being in old age, (b) the role various predictor variables, namely personal agency variables (self-efficacy, externality, hopelessness), motive dispositions (achievement, power, affiliation), coping strategies (accommodative flexibility, assimilative persistence), goal variables (goal commitment, goal attainability, goal probability), and subjective health perception, play in explaining individual differences in subjective well-being, (c) changes in SWB as well as changes in the predictor variables after an interval of almost five years, and (d) the degree to which the predictor variables can explain age-related changes in SWB.

METHOD

The Study

The study is part of the extensive Munich **Genetic Oriented Lifespan Study** on differential Development (GOLD), started by Kurt Gottschaldt in 1937, with a sample of 180 mono- and dizygotic twins who were then about 11 years old (Weinert & Geppert, 1996, 1998; Weinert, Geppert, Dörfert, & Vieh, 1994; see also Geppert & Halisch, in press). The participants who survived World War II were studied repeatedly in several measurement waves. For a follow-up study (named *measurement wave 1* in the following) conducted between 1995 and 1999, the original sample was extended with new pairs of twins of 63 to 84 years, giving a total of 393 participants altogether. In order to conduct cross-sectional analyses, the sample was divided into three age cohorts (Table 1). After an interval of almost five years, the participants were re-interviewed (*measurement wave 2*). This time, the sample was reduced to 325 participants (116 males and 209 females).

Table 1. Males and females, median age and age range of the three age cohorts

	Age cohorts		
	1	2	3
Males	63	45	26
Females	76	88	95
Median age	66;8	70;10	75;9
Age range (years; months)	63;8 – 68;11	69;0 – 72;11	73;2 – 84;4

In the GOLD study, a wide array of cognitive, emotional, motivational, social, and socio-economic variables was employed, and owing to the different measurement waves over a period of more than 60 years and the special sample of twins, it provides a valuable data pool for various developmental and genetic questions. The present chapter focuses on a portion of the study only and is not concerned with heredity analyses (for that see Geppert & Halisch, in press). Due to its design, the study allowed (a) cross-sectional as well as (b) longitudinal analyses of developmental changes.

Measures

Subjective Well-being

As mentioned above, SWB is usually conceived of having three components: a primarily cognitive element, *life satisfaction*, and two emotional elements, *positive* and *negative affect*.

Life Satisfaction

To assess life satisfaction, we used the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), in which the participants are requested to indicate their agreement/disagreement with five statements (e.g., “In most ways, my life is close to ideal,” “If I could live my life over, I would change almost nothing”) on a seven-point scale (1=*strongly disagree* to 7=*strongly agree*).

Affective Well-being

Positive and negative affect were measured with the Affect Balance Scale (Bradburn, 1969). Sample items (four statements for positive and negative affect, respectively) included, for example: “During the past two weeks, did you ever feel pleased about having accomplished something?” “During the past two weeks, did you ever feel depressed or very unhappy?” Response choices were *yes/no*.

Personal Agency

Self-Efficacy

Self-efficacy was assessed via a questionnaire in which competence beliefs and internal control beliefs were aggregated to a self-efficacy score (Greve, Anderson, & Krampen, 2001; Krampen, 1991). The scales consisted of eight items each. Participants were instructed to agree or disagree on a six-point scale with statements that describe competence and control beliefs (e.g., “In unclear or dangerous situations, I always know what to do.” = *competence belief*. “When I make plans, I am almost certain to make them work.” = *internal control belief*.)

Externality

The externality measure is comprised of a scale for social externality (attribution to other persons) and one for fatalistic externality (attribution to good or bad luck or fate) (Greve et al., 2001; Krampen, 1991). Participants had to indicate their agreement/disagreement (six-point scale) with eight items for social externality (e.g., “I feel like what happens to me in my

life is mostly determined by powerful people.”) and eight items for fatalistic externality (e.g., “Often there is no chance of protecting my personal interests from bad luck happenings.”)

Hopelessness

For the measurement of *hopelessness*, we employed the widely used Beck Scale that assesses the degree to which individuals hold negative expectations towards their futures (Beck et al., 1974; German version by Krampen, 1994).

Motives

The achievement, power, and affiliation motives were assessed by the Personality Research Form (Jackson, 1984; German version by Stumpf, Angleitner, Wieck, Jackson, & Beloch-Till, 1985).

Coping

To assess the coping strategies of *assimilative persistence* and *accommodative flexibility*, we used a questionnaire developed by Brandtstädter and Renner (1990). The participants had to indicate their agreement/ disagreement with 15 items for each measure on a five-point scale (e.g. “I can be very obstinate in pursuing my goals,” “The harder a goal is to achieve, the more desirable it often appears to me” = *assimilative persistence*. “I usually recognize quite easily my own limitations,” “I can adapt to changes in a situation quite easily” = *accommodative flexibility*).

Goals

We measured the goal variables of *goal commitment*, *goal attainability* and *goal probability* by adopting a technique developed by Brunstein (1993). The participants were asked for goals they pursue within the next six to twelve months. After having listed their goals, they indicated the two goals most important to them, and then they rated each of these along a number of goal variables. All judgments were made on a seven-point scale, with endpoints labeled *completely disagree* and *completely agree*. The *commitment* scale consisted of six statements (e.g., “No matter what happens, I will not give up this goal”). The *attainability* scale was also comprised of six statements (e.g., “I have many opportunities in my everyday life to work on this goal”). Finally, the participants estimated the *probability* of reaching the goal on a percentage scale from 0% to 100%.

Subjective Health

We constructed an index of *subjective health perception* based on the participants’ estimates of their own states of health using three questions: (1) “How would you estimate your health at the moment?” five-point scale: 1=*very bad*, 5=*very good*. (2) “Is your state of health worse or better than five years ago, or has it remained unchanged?” Response choices were *worse*, *unchanged*, *better*. (3) “How strongly do your health problems impede you in living your life?” Response choices were *not at all*, *a little*, *very strongly*. The scores were z-transformed, and the mean of the three z-scores yielded the subjective health perception index.

RESULTS

Cross-Sectional Analyses

The first part of the results section is concerned with (a) our participants' SWB, (b) individual differences in the predictor variables, and (c) the influence that these variables had on SWB measures at measurement wave 1.

Subjective Well-being

Table 2 shows the intercorrelations of cognitive and affective well-being measures, and Figure 1 depicts the indicators of SWB as a function of age and gender. Life satisfaction, positive and negative affect were correlated in the expected way to a moderate degree (Table 2). This is completely in line with general findings of well-being research: The three components of subjective well-being are interrelated but, nevertheless, clearly distinct from each other.

Table 2. Intercorrelations of well-being measures

		Affect	
		positive	negative
Life satisfaction		.37	-.37
Affect	positive	-	-.45
	negative		-

Before looking at age and gender differences in SWB, first, an inspection of Figure 1 shows that life satisfaction and affective well-being scores were generally rather positive. The mean of the life satisfaction score was a full scale-point beyond the midpoint (4) in the positive range. The same effect became clearly evident in the affect scales, too. On average, our participants indicated an elated mood much more often than a depressed mood.

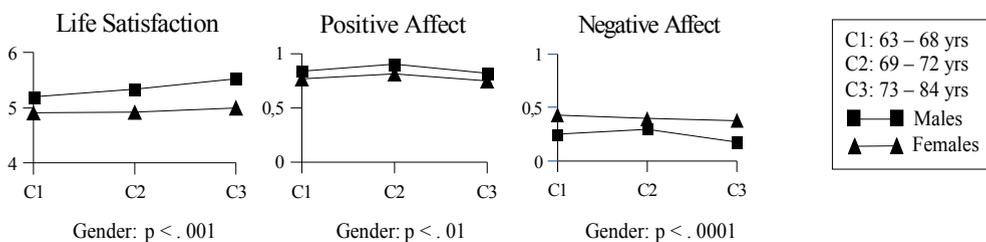


Figure 1. Subjective well-being as a function of age cohort (C1, C2, C3) and gender.

Two-way ANOVAs (age cohort x gender) revealed that males, as compared to females, were much more satisfied with their lives and showed more positive and less negative affect. There was no evidence of an age-dependent increase or decrease, either in cognitive or in affective well-being. Satisfaction with life seemed to increase from cohort 1 to cohort 3, especially in males, but this tendency was far from significant.

Predictor Variables

Table 3 depicts the zero-order correlations of the predictor variables. Self-efficacy was negatively correlated with externality and hopelessness and was positively related to all other variables, with the exception of the affiliation motive and subjective health perception.

Table 3. Zero-order correlations of the predictor variables

	2	3	4	5	6	7	8	9	10	11	12
1. Self-efficacy	-.33	-.41	.35	.38	.17	.41	.46	.23	.34	.24	
2. Externality		.35	-.14	-.17		-.32	-.28	-.18	-.25	-.17	
3. Hopelessness			-.27	-.30	-.13	-.39	-.32	-.19	-.38	-.23	-.23
4. Achievement				.46		.20	.65	.14	.15		
5. Power					.18	.18	.52	.17	.15		
6. Affiliation											
7. Flexibility							.21	.17	.24		.18
8. Persistence								.25	.20		
9. Goal commitment									.47	.33	
10. Goal attainability											.47
11. Goal probability											
12. Subjective health											

All reported coefficients $p < .01$; bold coefficients $p < .0001$.

Externality and hopelessness were quite strongly correlated but were negatively correlated with nearly all other variables. Amongst the motives, the achievement and power motives were intercorrelated to a substantial degree, and both were positively correlated with self-efficacy and especially with assimilative persistence. Both were negatively correlated with hopelessness. The affiliation motive was not associated with any other variable substantially.

Accommodative flexibility and assimilative persistence were positively interrelated to a small degree. Both were correlated in the *same* way with self-efficacy, externality and hopelessness. However, there was a clear difference in the correlations with the achievement and power motives. Persistence was correlated with achievement and power, yet flexibility was not.

The goal parameters¹ of goal commitment, goal attainability, and goal probability were interrelated to a substantial degree. This means that participants who are committed to their goals mostly estimate the attainability and probability of reaching these goals rather high. The goal variables were correlated with the personality variables to a moderate degree—positively with self-efficacy and negatively with externality and hopelessness. Both coping strategies correlated marginally with goal commitment and goal attainability but not with goal probability.

¹ In the analyses of measurement wave 1 mean scores of the participants' first and second goal were computed for goal commitment, goal attainability and goal probability.

Finally, Table 3 reveals that subjective health perception had virtually no relation with the other variables. There were only two fairly small correlations: Increased hopelessness went together with diminished health perception, and accommodative flexibility seemed to have a slight positive influence on subjective health.

Table 4. Varimax-rotated principal components of the predictor variables

	Factor 1	Factor 2	Factor 3	Factor 4
Self-efficacy	.51	.27	.46	.04
Externality	-.23	-.25	-.50	-.38
Hopelessness	-.27	-.25	-.66	-.12
Achievement	.80	-.00	.07	.02
Power	.77	.08	.04	.14
Affiliation	.16	.10	.05	.87
Flexibility	.15	.13	.72	-.13
Persistence	.85	.11	.12	-.06
Goal commitment	.16	.73	-.03	-.15
Goal attainability	.08	.79	.23	.07
Goal probability	-.01	.75	.10	.13
Subjective health	-.21	-.15	.65	.22

Eigenvalues > 1; percentage explained: 62.1.

The variables were subjected to a principal component analysis (varimax-rotation), which resulted in a clear four-factor solution. The factor loadings are presented in Table 4. Factor 1 was made up of accommodative persistence, the achievement and the power motives (loadings > .77). Factor 2 is a “goal factor” with loadings (> .73) by goal commitment, goal attainability, and goal probability. Factor 3 consisted of a combination of assimilative flexibility, low hopelessness, and subjective health perception (loadings > .65), and—to a lesser extent—low externality (loading = .50). Factor 4 had only one distinct loading (.87) by the affiliation motive. Of special interest is self-efficacy, which had substantial loadings on factor 1 (.51) as well as on factor 3 (.46).

Figures 2 to 5 depict the personal agency variables, motive dispositions, coping styles, and goal parameters as a function of age and gender. Two-way ANOVAs (age cohort x gender) were computed for each variable. There were pronounced gender differences in self-efficacy and hopelessness (Figure 2): Males were characterized by higher self-efficacy and lower hopelessness than females. A significant increase in externality could be observed with age, but this trend is qualified by an age x gender interaction. For females, externality continuously rose with age whereas for males a curvilinear effect took place: After an initial decrease from cohort 1 to cohort 2, a strong increase in externality occurred in cohort 3.

There were also clear gender differences in the achievement and power motives (Figure 3): Males were much more achievement and power motivated than females. These differences became even more pronounced with age as the age x gender interactions show. Differences in the affiliation motives were comparatively weak. The age x gender effect is attributed solely to an increase in the affiliation motive for males in cohort 3 and a concomitant decrease for females.

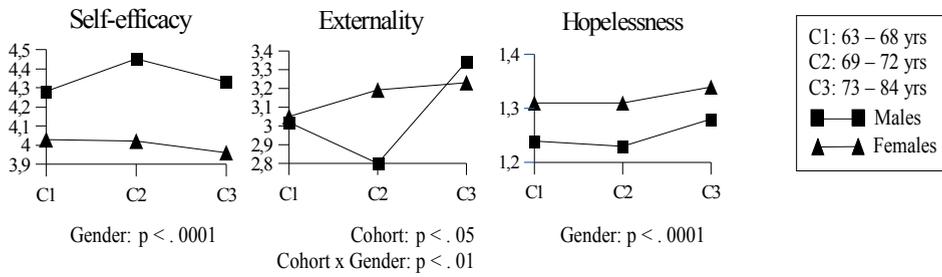


Figure 2. Personal agency variables as a function of age cohort (C1, C2, C3) and gender.

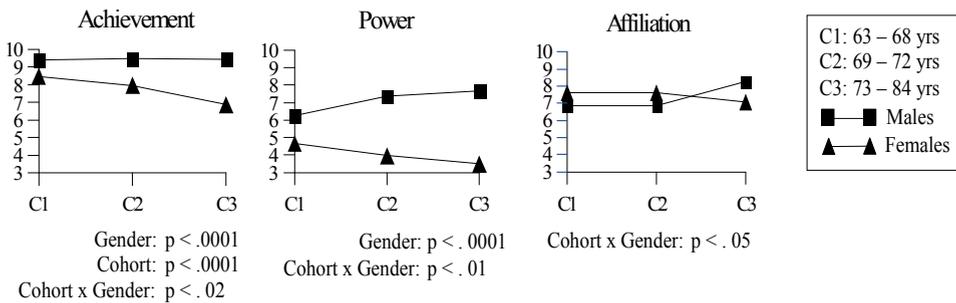


Figure 3. Motive dispositions as a function of age cohort (C1, C2, C3) and gender.

No age or gender differences could be found in accommodative flexibility (Figure 4). Assimilative persistence, on the other hand, diminished with age, and males were more persistent than females.

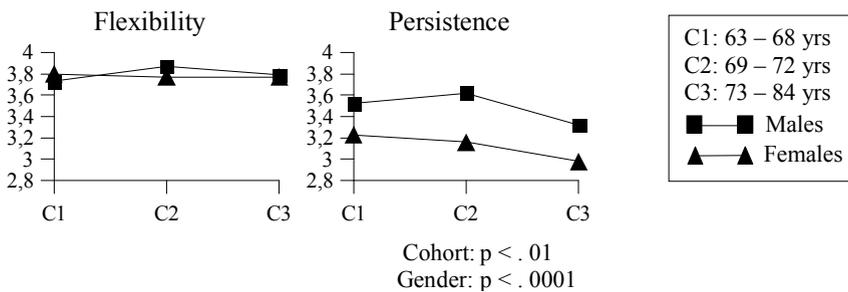


Figure 4. Coping strategies as a function of age cohorts (C1, C2, C3) and gender.

Finally, substantial gender differences were found for goal attainability and goal probability but not for goal commitment (Figure 5). Males estimated the attainability and the probability of reaching their goals higher than females. However, no age-related differences were found with respect to the goal parameters. Individuals of all ages pursued important personal goals. The degree of commitment, goal attainability and goal probability did not change with age, although there seemed to be a slight increase in goal probability in the oldest age group.

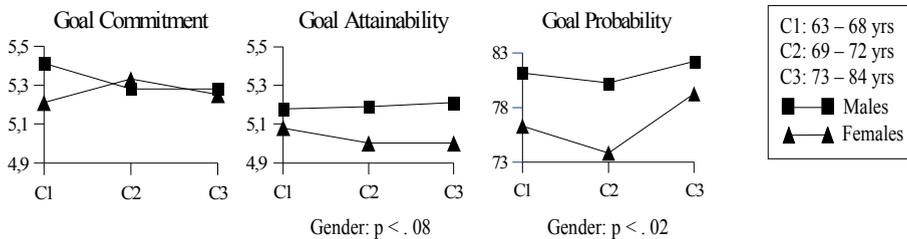


Figure 5. Goal variables as a function of age cohort (C1, C2, C3) and gender.

Concerning the participants' subjective health perception, no significant gender or age effects could be found (Figure 6). A tendency towards lower subjective health in the oldest age cohort did not reach significance.

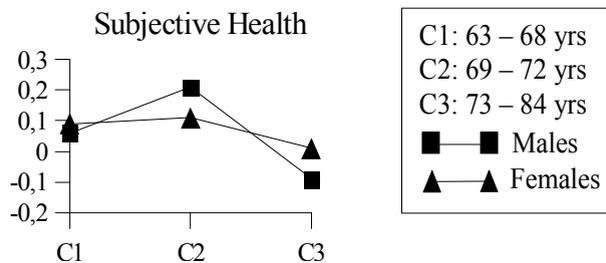


Figure 6. Subjective health perception as a function of age cohort (C1, C2, C3) and gender.

Predictors of Well-being

The following analyses are concerned with the influence the various predictors had on SWB. Looking first at life satisfaction, the correlations (Table 5) show that particularly self-efficacy but also flexibility, goal attainability, and goal probability went together with high life satisfaction scores. Hopelessness, in particular, and also externality were negatively correlated with life satisfaction. There were only weak but nevertheless positive correlations between the achievement, power, and affiliation motives and life satisfaction. Concerning affective well-being, the pattern of correlations was comparable, but the coefficients were generally lower. For subjective health perception, in contrast, the correlations with the affective well-being scores were notably higher than the correlation with life satisfaction.

As the predictor variables were intercorrelated to a considerable extent (Table 3), we conducted multiple regression analyses to estimate the influence each predictor had on cognitive and affective well-being (Table 6). Since conceptual differences between positive and negative affect are not the focus of the present paper, an affect-balance score was computed for affective well-being (positive minus negative affect scores).

Self-efficacy was the most powerful predictor of life satisfaction. Nearly equally important was low hopelessness. All other variables did not play a significant role in explaining the variance of life satisfaction scores. Concerning affective well-being, quite a different picture emerged. Hopelessness, and to a minor extent self-efficacy, were still important, but subjective health perception, which played absolutely no role in explaining life satisfaction, was by far the most powerful predictor of affective well-being.

Table 5. Correlations of predictor variables with SWB-measures

	Life satisfaction	Affect	
		positive	negative
Self-efficacy	.42	.25	-.28
Externality	-.20	-.19	.15
Hopelessness	-.46	-.42	.28
Achievement	.18	.20	-.16
Power	.14	.14	-.13
Affiliation	.15		
Flexibility	.30	.21	-.18
Persistence	.15	.20	-.16
Goal commitment			
Goal attainability	.28	.25	-.14
Goal probability	.24	.16	-.21
Subjective health	.17	.32	-.28

All reported coefficients $p < .01$; bold coefficients $p < .0001$.

Table 6. Regression analyses of predictors of life satisfaction and affect balance

Life satisfaction			Affect balance		
Predictors	β	$p <$	Predictors	β	$p <$
Self-efficacy	.30	.0001	Subjective health	.27	.0001
Hopelessness	-.27	.0001	Hopelessness	-.21	.0001
Persistence	-.11		Self-efficacy	.15	.01
Goal probability	.10		Goal commitment	-.13	.05
Affiliation	.08		Goal probability	.11	.05
Goal commitment	-.07		Goal attainability	.09	
Achievement	.07		Achievement	.05	
Goal attainability	.07		Externality	-.03	
Power	-.06		Affiliation	-.02	
Flexibility	.06		Persistence	.02	
Subjective health	.05		Power	.00	
Externality	.02		Flexibility	.00	

Note. $R = .55$, $p < .0001$

Note. $R = .54$, $p < .0001$.

Computing the same analyses within the three age cohorts revealed quite different age-related results. Table 7 depicts the correlations of predictor variables and SWB scores within the cohorts, and Tables 8 and 9 show the results of the respective regression analyses.

The impact of self-efficacy and hopelessness on life satisfaction was mainly present in the youngest cohort (Table 8). Hopelessness was still a predictor of life satisfaction in the middle-age cohort but to a moderate degree only in the oldest cohort. Similarly, the impact of self-efficacy diminished with age and was negligible in the oldest cohort. In the youngest cohort, in addition, accommodative flexibility played a moderate role. Flexibly adjusting one's own aspirations to situational constraints obviously had a beneficial effect on life

satisfaction. Tenaciously pursuing personal goals (assimilative persistence), however, had, if any, a detrimental influence. In the oldest age group, these variables no longer played a role. Instead, a predictor variable that was completely unimportant in the two younger groups became prevalent, namely, goal probability. Goal probability was almost the only predictor of life satisfaction in the oldest old.

Table 7. Correlations of predictor variables with SWB-measures within age cohorts

Predictors	Life satisfaction			Affect balance		
	63–69 yrs	69-73 yrs	73-84 yrs	63–69 yrs	69-73 yrs	73-84 yrs
Self-efficacy	.51	.41	.31	.35	.29	.29
Externality	-.33	-.30		-.30		
Hopelessness	-.51	-.51	-.34	-.49	-.42	-.28
Achievement		.21		.23	.24	
Power				.26		
Affiliation						
Flexibility	.46	.25		.37		
Persistence		.25			.30	
Goal commitment						
Goal attainability		.35	.34		.39	
Goal probability			.47	.23	.25	
Subjective health		.22		.37	.27	.40

All reported coefficients $p < .01$; bold coefficients $p < .0001$.

Table 8. Regression analyses of predictors of life satisfaction within age cohorts

63-69 yrs		69-73 yrs		73-84 yrs	
Predictors	β $p <$	Predictors	β $p <$	Predictors	β $p <$
Self-efficacy	.38 .0001	Hopelessness	-.32 .002	Goal prob.	.38 .0001
Hopelessness	-.37 .0001	Self-efficacy	.23 .05	Hopelessness	-.22 .05
Flexibility	.24 .01	Subj. health	.18 .05	Externality	.17
Persistence	-.17	Affiliation	.18 .05	Commitment	-.16
Attainability	-.13	Attainability	.18	Self-efficacy	.14
Subj. health	-.09	Power	-.10	Attainability	.13
Power	-.07	Externality	-.08	Achievement	.12
Affiliation	.06	Achievement	.06	Persistence	-.07
Achievement	.04	Goal prob.	-.05	Affiliation	-.07
Externality	.03	Persistence	-.04	Flexibility	-.03
Goal prob.	.02	Flexibility	-.03	Subj. health	.02
Commitment	.01	Commitment	-.01	Power	.01

Note: $R = .66$; $p < .0001$

Note: $R = .64$; $p < .0001$

Note: $R = .58$; $p < .0001$

The predictors of affective well-being were also different within the age cohorts (Table 9). As was the case for life satisfaction, hopelessness played a prominent role in explaining affective well-being, but only in the two younger age groups. Concerning the other predictor variables, a completely different picture emerged. Self-efficacy was fairly negligible in explaining affective well-being scores, but subjective health perception, a factor that did not

play any role in predicting life satisfaction, had a prominent impact on affective well-being. In the oldest age cohort, only subjective health could predict affective well-being to a significant degree.

Table 9. Regression analyses of predictors of affect balance within age cohorts

63-69 yrs		69-73 yrs		73-84 yrs	
Predictors	β p <	Predictors	β p <	Predictors	β p <
Hopelessness	-.30 .001	Attainability	.38 .0001	Subj. health	.37 .0001
Subj. health	.21 .05	Hopelessness	-.26 .01	Self-efficacy	.27 .05
Goal prob.	.18 .05	Subj. health	.20 .05	Externality	-.16
Commitment	.18 .05	Persistence	.20	Goal prob.	.11
Power	.17	Power	-.14	Commitment	-.09
Attainability	-.14	Commitment	-.09	Flexibility	-.08
Self-efficacy	.13	Self-efficacy	.08	Hopelessness	-.06
Flexibility	.10	Externality	.08	Achievement	.06
Achievement	.10	Affiliation	.07	Persistence	-.04
Persistence	-.08	Achievement	.07	Attainability	-.03
Externality	-.06	Goal prob.	.04	Affiliation	-.02
Affiliation	-.05	Flexibility	-.02	Power	.02
<i>Note: R = .65; p < .0001</i>		<i>Note: R=.65; p < .0001</i>		<i>Note: R = .49; p < .01</i>	

Longitudinal Analyses

The following part of the results section (a) presents findings of changes in SWB and in the predictor variables from measurement wave 1 to measurement wave 2 and (b) is concerned with the question to what degree the predictor variables can explain changes in cognitive and affective well-being within the five-year interval.²

Subjective Well-being

Table 10 depicts the intercorrelations between the SWB measures at waves 1 and 2. The findings of wave 2 were in line with those of wave 1 (Table 2): The well-being measures were correlated but by no means identical. Of special interest are the retest stabilities. The table shows a remarkably high stability coefficient for life satisfaction, which is within the range reached by personality measures (Table 11, below). For the affect scores, in contrast, the stability coefficients were much lower and did not surpass the inter-score correlations.

Figure 7 depicts the age trends for the SWB components. Two-way repeated measurement ANOVAs (age cohort x measurement wave) were conducted for each measure. Our participants' life satisfaction increased significantly within the five-year interval. However, positive affect decreased. This effect seemed to be more pronounced in the two older cohorts. For negative affect, the results were not so clear. It decreased in the youngest cohort, remained stable in the middle age cohort, and increased in the oldest cohort, but none of these effects reached significance. Hence, there were no significant effects for the affect-

² There were, again, main effects for gender at wave 2. However, since there were virtually no interaction effects of gender with age or measurement wave, and since gender was not the focus in present analysis, results on gender were omitted in the following analyses.

balance score, although especially in the oldest cohort, resultant affect notably decreased. In sum, we have the somewhat puzzling effect that *life satisfaction increased* while *affective well-being, especially positive affect, decreased* during the same period.

Table 10. Inter-score correlations / retest stability of SWB-measures

		Life satisfaction	Affect	
			positive	negative
Wave 1	Life satisfaction	.69	.30	-.28
	Affect positive	.33	.29	-.17
	Affect negative	-.31	-.17	.40
Wave 2	Life satisfaction	-	.44	-.34
	Affect positive		-	-.41
	Affect negative			-

Bold = stability coefficients.

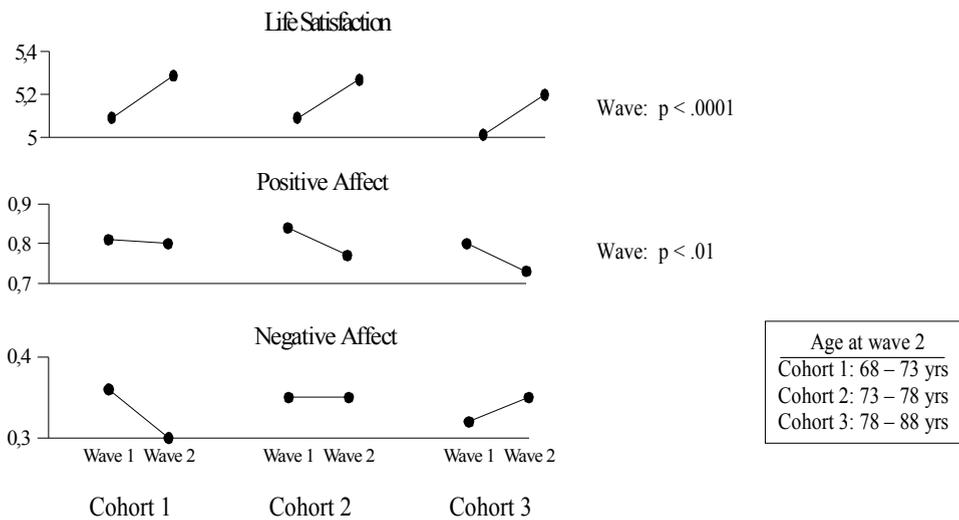


Figure 7. Subjective well-being in three age cohorts at both measurement points.

Predictor Variables

Table 11 reveals remarkably high test-retest correlations (= stability coefficients) for personal agency variables, motives dispositions, and coping strategies. In contrast, test-retest correlations for goal commitment, goal attainability, and goal probability were much lower.³ Goal variables refer to specific actual goals and do not have the quality of a personality dimension. Subjective health perception lay somewhat in between. Obviously, subjective health perception was not as stable as personality variables but was influenced by situational factors to a greater degree.

³ As a substantial portion of participants indicated only one goal at measurement wave 2 for the following analyses, only goal variables of the first goal were used.

Table 11. Test-retest correlations of predictor variables

	Measurement wave 2
1. Self-efficacy	.72
2. Externality	.66
3. Hopelessness	.63
4. Achievement	.72
5. Power	.81
6. Affiliation	.74
7. Flexibility	.66
8. Persistence	.76
9. Goal commitment	.20
10. Goal attainability	.30
11. Goal probability	.17
12. Subjective health	.48

Most of the predictor variables were also subject to age changes (Figures 8 to 12). For each variable, separate two-way repeated measurement ANOVAs (age cohort x measurement wave) were computed. For self-efficacy, only a weak effect of measurement wave but significant effects of cohort and cohort x wave interaction could be found (Figure 8).

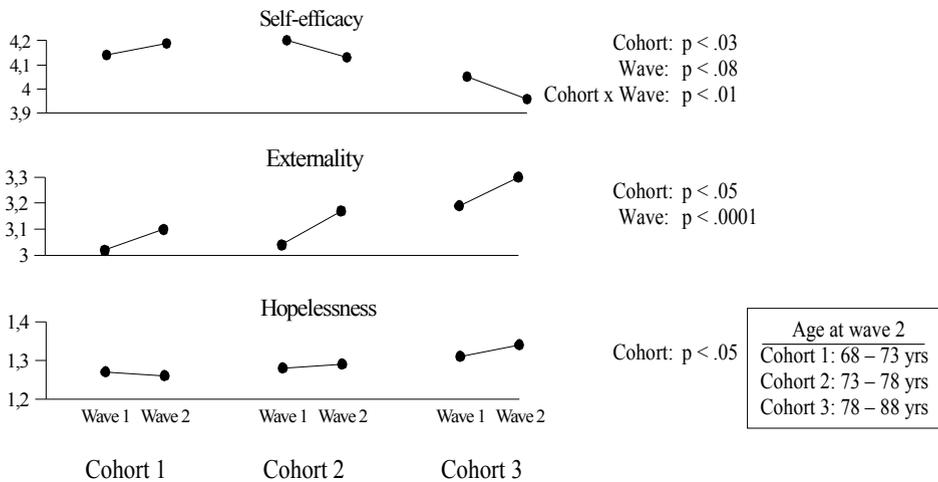


Figure 8. Personal agency variables in three age cohorts at both measurement points.

This was due to the youngest age group in which an *increase* in self-efficacy took place. From cohort 2 on there was a clear *decrease* and, overall, self-efficacy was lowest in the oldest cohort. External control beliefs and hopelessness increased (the latter falling short of significance). For both variables, the highest scores were found in the oldest cohort. Looking at the three personal agency variables together, it seems striking that changes took place beginning in the middle-age cohort and were most pronounced in the oldest cohort. This form

of developmental trend—relative stability in the young old but decline in the oldest old—was also found in most of the other personality variables.

The achievement and power motives declined with age (Figure 9). But again, as was the case for personal agency, this decline began in the middle-age cohort only, whereas in the youngest cohort, both motives remained quite stable. For the affiliation motive, no age-related effect could be detected, although there seemed to be a decline in the oldest old.

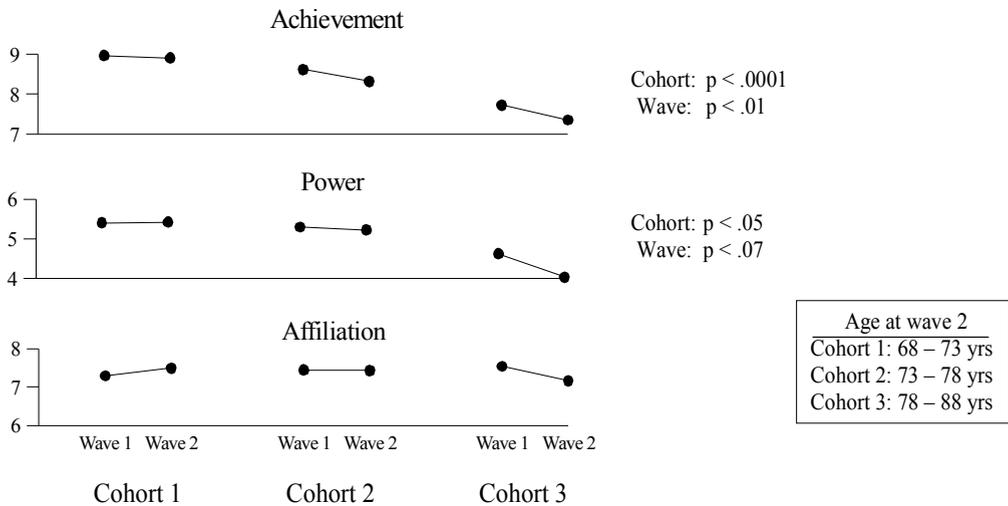


Figure 9. Motive dispositions in three age cohorts at both measurement points.

Both coping styles also revealed a significant decline with age (Figure 10). Assimilative persistence decreased markedly and was lowest in the oldest cohort. For accommodative flexibility, a decreasing effect also took place.

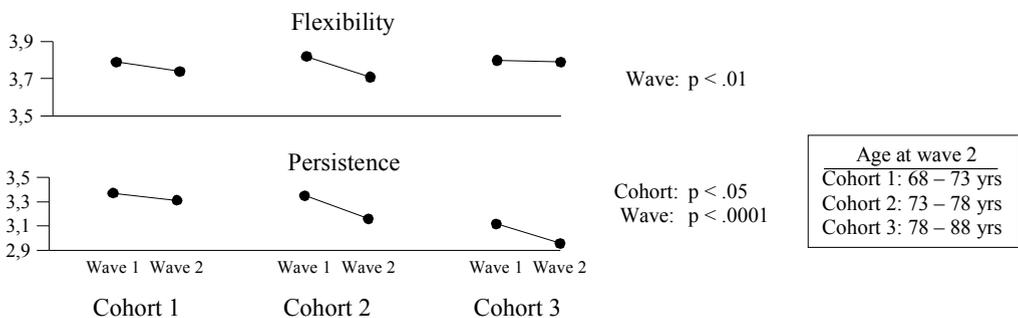


Figure 10. Coping strategies in three age cohorts at both measurement points.

For the goal variables, pronounced wave effects were found (Figure 11). The participants' commitments to their most important goals increased, but at the same time, the goal attainability and especially the probability of goal realization were estimated lower than before. Finally, subjective health perception clearly decreased in the five-year interval (Figure 12).

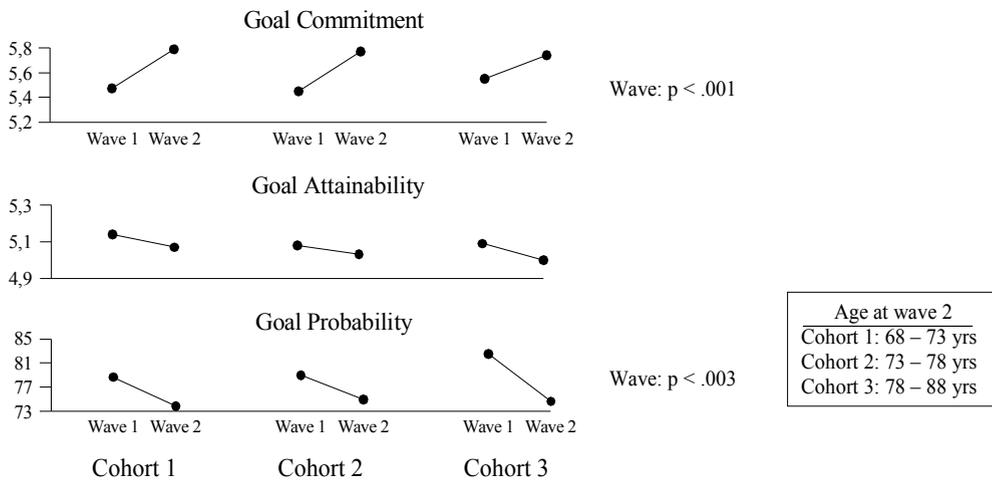


Figure 11. Goal variables in three age cohorts at both measurement points.

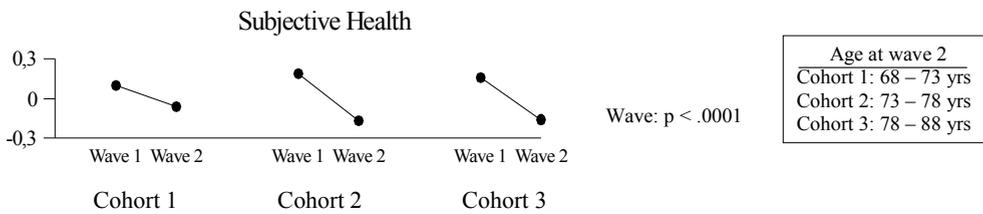


Figure 12. Subjective health perception in three age cohorts at both measurement points.

Table 12. Partial correlations of predictor variables with changes in SWB**

	Life satisfaction*	Affect *	
		positive	negative
Self-efficacy		.22	
Externality		-.17	
Hopelessness	-.31	-.50	.30
Achievement		.17	
Power		.18	
Affiliation		.13	
Flexibility	.19	.25	
Persistence		.15	
Goal commitment			
Goal attainability		.18	
Goal probability	.17	.19	-.15
Subjective health		.32	-.26

Note: All reported coefficients $p < .01$; bold coefficients $p < .0001$.

* Difference scores: wave 2 – wave 1.

** controlling variables: SWB-measures at wave 1.

Predictors of Changes in Subjective Well-being

To estimate the impact the predictor variables had in explaining changes in SWB from wave 1 to wave 2, we computed difference scores of SWB measures (wave 2 measures minus wave 1 measures) and conducted partial correlations between predictor variables and SWB measures, controlling for baseline values of SWB measures at wave 1 (Table 12).

Changes in life satisfaction correlated negatively with hopelessness and positively with flexibility and goal probability. A similar pattern was found for the affect measures; changes in positive affect were additionally correlated with self-efficacy. This means that the cognitive and emotional components of SWB were influenced by the personality variables in the *same* direction and the puzzling fact of differing age trends in cognitive and affective well-being could not be explained by personality predictors. However, the findings concerning subjective health perception open a new avenue for interpretation. Subjective health was substantially correlated with changes in affective well-being, that is, feelings of restrictions due to ill health dampened the affect balance. In contrast, subjective health had no effect on changes in cognitive well-being whatsoever.

In a second step, we performed regression analyses of the SWB difference measures to estimate the impact each predictor variable had in explaining age-related changes in SWB. To control for baseline levels, the SWB scores at wave 1 were added to the list of predictors. Not surprisingly, the baseline values of SWB accounted for a great portion of variance in both analyses (Table 13). Following that, hopelessness was the most powerful (= detrimental) predictor of changes in cognitive as well as in affective well-being. In the case of life satisfaction, accommodative flexibility added a moderate amount to the explanation of variance. But self-efficacy, which was a very powerful impact factor for life satisfaction in the cross-sectional analyses (Table 6), had no effect at all in predicting *changes* in life satisfaction. The results concerning affective well-being (here, the affect-balance score was again used) showed a different picture. In contrast to life satisfaction, the only variable that added a significant value was subjective health perception.

Table 13. Regression analyses of predictors variables of changes in SWB

Life satisfaction*			Affect balance*		
	β	$p <$		β	$p <$
Satisf. (wave 1)	-.52	.0001	Affect (wave 1)	-.73	.0001
Hopelessness	-.30	.0001	Hopelessness	-.35	.0001
Flexibility	.14	.02	Subjective health	.22	.0001
Goal probability	.11		Flexibility	.08	
Externality	.10		Achievement	.08	
Persistence	.08		Persistence	-.07	
Self-efficacy	-.06		Goal probability	.05	
Achievement	-.06		Goal commitment	-.03	
Affiliation	.05		Goal attainability	.02	
Power	-.02		Power	-.02	
Subjective health	.02		Externality	.01	
Goal attainability	.01		Self-efficacy	-.00	
Goal commitment	.00		Affiliation	-.00	
<i>Note.</i> $R = .51, p < .0001$			<i>Note.</i> $R = .72, p < .0001$		

* Difference scores: wave 2 – wave 1.

CONCLUSIONS

At the beginning of our conclusions, we would like to make two caveats. Firstly, the sample consisted of monozygotic and dizygotic twins, but we disregarded this fact in our analyses (for genetic analyses, see Geppert & Halisch, in press). Secondly, most of our participants were quite fit. They easily managed to travel to Munich, to stay at a hotel for a week and to undergo lengthy testing at our institute. One has to be careful in generalizing our results to aged people who may not be as physically or as mentally able. Bearing these limitations in mind, our data, nevertheless, yielded some impressive results concerning personality variables and subjective well-being in old age.

Personality Variables

The personality variables formed a coherent and plausible pattern of four factors. From our view, two aspects are of special interest. First, the coping strategies of assimilative persistence and of accommodative flexibility were correlated to a moderate degree, but nevertheless, each was the leading variable of two independent factors. Assimilative persistence formed a factor of assertiveness together with the achievement and the power motive. Accommodative flexibility, on the other hand, was associated with low hopelessness and low externality, and, in particular, with good subjective health. Brandstädter and colleagues (Brandstädter & Renner, 1990; Brandstädter et al., 1998; Brandstädter et al., 1999) have consistently pointed out that the processes of assimilation and accommodation are functionally antagonistic but not mutually exclusive. Our results corroborate this assumption. Second, self-efficacy was not unambiguously attached to one factor. Instead, it had nearly equal loadings on the persistence as well as the flexibility factor. Obviously, individuals with a high sense of control and efficacy can use *both* strategies in the same way. High self-efficacy by no means simply implies assimilative efforts that aim to achieve and maintain desired outcomes. Confronted with the fact that, in old age, it becomes increasingly difficult to counteract losses and diminishing resources, individuals with high self-efficacy can also flexibly adjust their ambitions to situational constraints and “downgrade” their goals and aspirations. In our opinion, it would be misleading to argue that such lowering of aspirations would also inevitably damage feelings of self-efficacy. In expectancy-value theories, e.g. Atkinson’s risk taking-model (1957, 1964) or Heckhausen’s self-evaluation model (H. Heckhausen, 1991), success in tasks of moderate difficulty (= subjective success probability) yields the optimal self-evaluative outcome consequences. The key factor for subjective success probability is competence. Only tasks that are within the individual’s span of competence, that is tasks neither too easy nor too difficult, provide a well-adjusted balance of self-evaluative consequences. A lowering of goals, when confronted with the experience that even great effort is in vain can contribute to a positive self-evaluative balance and thus *enhance* self-efficacy. In this line of argumentation, it appears comprehensible to maintain that—depending on situational demands—individuals with high self-efficacy have both assimilative as well as accommodative coping strategies at their disposal.

High negative loadings of hopelessness and externality on the flexibility factor also confirm Brandstädter’s notion that accommodative strategies should not be confused with

hopelessness or depression (Brandtstädter et al., 1998). In contrast, in the model of assimilative and accommodative coping feelings of hopelessness rather reflect difficulties in shifting from assimilative to accommodative coping. Of equal interest is the fact that subjective health perception was associated with accommodative flexibility. We have pointed out that health is an important factor in successful aging, but instead of objective health, it is *subjective* health perception that plays the decisive role. According to our findings, accommodative and assimilative coping processes have a prominent impact on subjective health. Rigidly pursuing personal aspirations in spite of external resistance can lower subjective health but lowering one's own aspirations can obviously help to re-interpret situational constraints and alleviate the negative effects of health restrictions. Subjective health is not only a matter of objective health but also a consequence of accommodative coping processes. Similarly Pinquart (2001, p. 420) concluded "that older adults have higher abilities to adapt their criteria of perceived health to deteriorating objective health so that the age-associated growing number of objective health problems has only limited influence on health perception." Individuals who are able to adjust their ambitions to what is possible obviously feel influenced to a lesser degree by health restrictions.

In addition to persistence and flexibility, a third factor was made up of the goal variables. Individuals who were highly committed to their goals were mostly convinced that they could attain these goals and estimated the probability of reaching them as rather high. Again, self-efficacy comes into play: Individuals with high self-efficacy tended to pursue goals that they themselves consider to be within their own control. This result is in accordance with the relation of self-efficacy and accommodative coping processes, as discussed above.

Our data concerning gender differences corroborate the results found so far (Feingold, 1994). Males were characterized by a greater sense of personal agency (self-efficacy, low hopelessness, low externality), and higher assertiveness (persistence, achievement motive, power motive) compared to females. Furthermore, although males and females were equally committed to their goals, males estimated the attainability and the probability of achieving their goals at a significantly higher level. In the light of these rather pronounced differences, it is of special importance that we did not find any gender difference in accommodative flexibility and subjective health perception. Males and females are equally able to adjust their ambitions to situational constraints, and their subjective interpretation of their own health does not differ.

The central topic of the present paper is related to developmental changes in old age. The range of our sample spans from 64 years (at wave 1) to almost 90 (at wave 2). This means that at the time of the first measurement, a sizable portion of participants had reached retirement age (a few were still working). Entry into retirement has been described as a life task in which occupational involvements have to be replaced with other purposeful activities (Havighurst, 1960, 1972; Neugarten & Hagestad, 1976). Retired people can no longer derive satisfaction from occupational pursuits or raising a family but have to find new ways to lead rewarding lives (cf. Rapkin & Fischer, 1992). Accordingly, their goals mostly refer to traveling, intellectual tasks (e.g. learning a new language), or supporting grandchildren (Halisch, in press). At the other end of the age range, our oldest participants inevitably approached the phase of senescence and frailty. They had probably reached their limits of cognitive functioning or were even in a phase of terminal decline, and they had to face the fact of a limited future time perspective. This final stage of life has been described as the

“fourth age”—in contrast to the “third age” of the young old reaching the phase of retirement (P. B. Baltes & Smith, 2003).

To reflect these “multiple ages of old age,” we divided our sample into three age cohorts. The cross-sectional analyses revealed only a few differences between age cohorts. Assimilative persistence and the achievement motive decreased from cohort 1 to cohort 3, while externality increased. Remarkably, we found no significant cohort differences in subjective health, although it seemed to be lowest in the oldest cohort. There were also no age differences concerning the goal variables. Of course, the longitudinal analyses are more convincing, and these analyses show that most of the predictor variables were subject to distinct age-related changes. Personal agency clearly diminished with age: Self-efficacy decreased, whereas externality and hopelessness increased. In the same way, the achievement motive, the power motive and assimilative persistence showed a distinct decline. Careful inspection of the respective graphs, however, reveals that these developmental changes occurred only in the older participants (beginning at about 73 years of age) and were most strongly pronounced in the oldest (78 upward). In cohort 1, self-efficacy actually seemed to increase. In accordance with the concept of a third and a fourth age (P. B. Baltes & Smith, 2003), these results confirm that the first years of retirement age (cohort 1) are characterized by a relative stability of personal agency, sense of control, and assertiveness. A noticeable decline only begins later and reaches its lowest level in the oldest old. Accommodative flexibility also diminished with age but, compared to the other personality variables, to a much lesser degree. The mean levels of flexibility in cohort 1 and cohort 3 were nearly identical. Obviously, accommodative adaptation processes stay alive until the oldest age.

It is particularly noticeable that the decline in agency and assertiveness had no effect on goal commitment. Although our participants indicated fewer goals at wave 2 than at wave 1, their commitment to their most important goals increased with age. But at the same time, the probability of successfully achieving this goal decreased. This result can possibly be interpreted as the individual’s acceptance of a realistic view of their own remaining strengths and possibilities. Finally, in accordance with all scientific as well as naïve theories of aging, subjective health perception demonstrated a strong decline.

Subjective Well-being

Our data are in line with general findings of research on SWB. First, life satisfaction is correlated with both emotional measures of SWB (.37 with positive affect and -.37 with negative affect). These correlations are within the range reported by Lucas et al. (1996), for example, and since the coefficients reach only a moderate degree, they corroborate the assumption that the cognitive and affective components are distinct constructs (cf. also Schimmack et al., 2008). The correlation between positive and negative affect (-.45) slightly exceeded the coefficients reported by Lucas et al. (1996), but the difference was not great enough to cast doubt on the independence of both types of affect. Theoretical and empirical independence of components of SWB is a precondition for analyzing different developmental trends and searching for different predictors (see below). Second, as to the level of SWB, the results confirm that elderly people are mostly satisfied with their lives (e.g., Diener & Suh, 1998). On the average, our participants’ life satisfaction as well as their affective well-being were at a rather high positive level.

Numerous studies have addressed the question of gender differences in SWB. Although the results are somewhat inconsistent, it was mostly found that for women, life satisfaction is lower and affect is more negative than for men (cf. M. M. Baltes, Freund, & Horgas, 1999; Tesch-Römer, Motel-Klingebiel, & Tomasik, 2008). In a meta-analysis of 300 empirical studies, Pinquart and Sörensen (2001) found that this is also true in late adulthood, and our data corroborate these findings. We found comparable gender differences in all components of SWB. Usually this is attributed to different living conditions of men and women, to women's poorer financial resources, or their higher risk of being widowed or having health problems. But, in a cross-cultural study on gender differences and SWB, Tesch-Römer et al. (2008) came to the conclusion that opportunity structures and the availability of resources that are relevant to goal-directed behavior is probably the crucial factor. Our data provide a supplementary explanation: We found that males had higher self-efficacy scores than females and adhered to personal goals of higher attainability and probability. In accordance with findings of other studies (e.g., Brunstein, 1993, 1999), we showed that pursuing attainable goals enhances feelings of subjective well-being (Halisch & Geppert, 2001). In our view, this is one main reason why males indicated a greater satisfaction with life and a more positive affect balance than females.⁴

The long-term analyses revealed distinctly different stability coefficients for cognitive and affective SWB measures. The stability of life satisfaction (.69) came close to the stability reached by personality variables. The stabilities of the affect measures were much lower (.29 for positive affect and .40 for negative affect). Diener et al. (2006) reported similar stability coefficients of SWB measures. Life satisfaction is a kind of retrospect, a cognitive summary evaluation of one's life, and is much less affected by situational influences than the affect measures, which are rather indicators of one's actual mood. In addition, Diener et al. (2006) showed that the stability of positive affect declined with longer time periods, whereas the stability of negative affect remained at the same relatively high level. They put forward the idea that "these findings suggest that stable individual baselines might be more characteristic of negative affect than positive affect. However, [...] life satisfaction was most stable" (p. 308). These results also indicate that the different components of SWB can develop into different directions.

In the cross-sectional comparisons, we found no differences in SWB between age cohorts but the longitudinal analyses evinced clear and at first view somewhat puzzling results. Life satisfaction significantly *increased* in the five-year interval between the two measurement waves, whereas positive affect *decreased* during this time and was lowest in the oldest age cohort at measurement wave 2. For negative affect, there was no clear age effect, although the data suggest a curvilinear development: In the youngest age cohort, negative affect diminished, but in the oldest cohort, it increased from wave 1 to wave 2. Therefore, the affect balance clearly decreased in the oldest age cohort. In our view, this result again supports the assumption that affective well-being, compared to life satisfaction, is more sensitive to situational influences and impairments due to aging processes.

⁴ A post hoc analysis of covariance supports this assumption. The gender differences in life satisfaction and positive affect completely disappeared in an ANOVA controlling for self-efficacy as a covariate. The gender differences in negative affect also diminished but were still significant. The latter result could be interpreted by females' greater emotional intensity and their greater willingness to disclose negative emotions (Diener, Sandvik, & Larsen, 1985; Nolen-Hoeksema & Rusting, 1999).

Recently, Gerstorf and colleagues (Gerstorf, Ram, Estabrook et al., 2008; Gerstorf, Ram, Röcke, Lindenberger, & Smith, 2008) analyzed the data of deceased participants of two large-scale longitudinal studies. They showed that a mortality-related model explains individual differences in changes in life satisfaction better than an age-related model. This means that not chronological age but the proximity of death plays the decisive role. At some point not far from death, a terminal decline takes place: Both the individuals' functioning and well-being deteriorate quite rapidly. Gerstorf and colleagues only reported data on life satisfaction and not on affective well-being, and we can, therefore, only speculate at this point: Possibly the decline in affect in our oldest cohort can be interpreted as a first sign of approaching death.⁵

Predictors of Subjective Well-being

The present findings concerning the personality determinants of subjective well-being are completely in line with the top-down approach (Heller et al., 2004): Personality variables influence individual differences in SWB in old age. Generally—this comes as no surprise—hopelessness had a strong dampening influence on all components of SWB. Individuals who hold negative expectations towards their future negatively estimated their actual mood (affective well-being) and were dissatisfied with their lives (cognitive well-being). Additional determinants, however, were different (a) for different components of SWB and (b) for different age phases.

The cross-sectional analyses of measurement wave 1 revealed that the cognitive and affective components of SWB were influenced by the personality variables in different ways. Concerning life satisfaction, the results proved an often-stated but less frequently empirically tested (Charrow, 2006, Lachman et al., 2009) influence of self-efficacy. Elderly individuals who believe they have abilities allowing them to exercise influence on their lives are usually satisfied with their lives. Moreover, the correlations between personality variables and life satisfaction showed that, generally speaking, a sense of high personal agency (high self-efficacy, low hopelessness, low externality) combined with the ability to transform one's own aspirations flexibly to life constraints (accommodative flexibility) and therefore to pursue goals with high attainability and success probability were of high benefit for life satisfaction. The correlational pattern as to the affect measures was comparable, but the coefficients were much lower. The deciding variable was subjective health perception: Subjective health had a strong impact on affective well-being but was of only minor importance for life satisfaction. The regression analyses also confirmed that life satisfaction and affective well-being were influenced by different predictors. Self-efficacy was the most powerful predictor of life satisfaction, whereas subjective health perception had the strongest influence on affective well-being. Obviously, compared to life satisfaction, affective well-being is much more sensitive to actual and situational determinants such as health.

To detect possible age-related differences, we conducted the same analyses separately for the three age cohorts. Although there were no age-related differences in levels of cognitive and affective well-being, the predictor variables were different within the age cohorts. The major role of self-efficacy in life satisfaction only realized in the youngest cohort and was

⁵ In fact, the individuals who passed away before measurement 2 (n=39) indicated lower positive affect and higher negative affect than the rest of the sample at wave 1, but the differences did not reach significance.

attenuated with age; self-efficacy completely lost its importance in the oldest cohort. In the youngest cohort, the ability to flexibly adjust one's own aspirations (accommodative flexibility) additionally had a positive influence, whereas tenaciously pursuing personal goals (assimilative persistence) had, if at all, a detrimental influence. This underscores the importance of accommodative adaptation processes to secure personal continuity and integrity in age (Brandtstädter et al., 1998). In the oldest cohort, on the other hand, the variable goal probability, which had virtually no effect in the younger cohorts, came into play. The probability of reaching one's most important goal was by far the strongest predictor of life satisfaction in the oldest old. Here, all other factors played a subordinate role only. It has repeatedly been shown that striving for achievable personal goals can enhance SWB (Brunstein, 1993; Brunstein, 1999; Halisch & Geppert, 2001), but this result emphasizes a special point: Obviously, when confronted with the diminishing time yet to be lived, it is of increasing importance whether one still sees a chance of realizing personal goals or not.

The analyses of the predictors of affective well-being corroborated the general influence of subjective health perception in all cohorts, but the impact became increasingly stronger with age. In the oldest cohort, it was by far the most important determinant of individual differences in affective state.

We found that the cognitive and affective components of SWB moved in different directions from wave 1 to wave 2 (see above): Life satisfaction *increased*, whereas positive affect (and hence the affective balance of positive and negative affect) *decreased*. The regression analyses showed that these different developmental trends could be partly explained by the predictor variables we employed. First, hopelessness had a great impact on changes in SWB as a whole. But beyond that, different predictors again came into play. Flexibility in goal adjustment and a high success probability of desired goals led to an enhancement of life satisfaction. Again, the special role of a shift to accommodative processes in age becomes obvious. Individuals who can lower their aspirations to meet age-related constraints and therefore strive for achievable goals continue to have high life satisfaction. In contrast to life satisfaction, the decline in affective well-being could not be explained by personality and goal variables. Instead, subjective health perception was the only factor that had an impact on the decrease in affect. Feelings of restrictions due to ill health reduced the affect balance. However, subjective health had no effect on changes in cognitive well-being whatsoever. To underscore the key point: The perception that one's own health is poor impaired affective well-being, but the perception of being in good health did not increase life satisfaction. On the other hand, flexibility in goal adjustment was beneficial with respect to the increase in life satisfaction but did not account for changes in affective well-being.

In general, we can draw the following three conclusions about subjective well-being in old age. First, personality variables influence SWB to a great extent. Secondly, the personality determinants of SWB are different for the various components of SWB, and, finally, they are also different for different age phases.

ACKNOWLEDGEMENTS

We gratefully acknowledge the assistance of Rolf Brekenkamp and Rosie Wallis in improving the English text.

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