5. DISCUSSION

The starting point of the present study was the question how people actively, within biological, societal, and resource constraints, influence their own development. I used the model of selection, optimization, and compensation (P. B. Baltes & M. M. Baltes, 1990) as a theoretical framework to approach this question. The action-theoretical specification of this model (Freund & P. B. Baltes, 2000) proposes that setting and pursuing personal goals plays a central role in the active management of life. Through the selection of personal goals, people give direction to their development. Selecting goals, however, is only the first step to attaining them. Shaping one's development in aspired directions furthermore requires the investment of effort and other suitable resources into the pursuit of one's goals (optimization), as well as into the counteraction of goal-relevant losses (compensation).

A central assumption underlying the present study was that not all expressions of selection, optimization, and compensation are per se equally adaptive. The SOC-model provides a heuristic framework to guide the search for specific characteristics of adaptive implementations of the three developmental-regulatory processes. The present study focused on the nature of intergoal relations as a characteristic that might differentiate more adaptive from less adaptive implementations of the *selection* principle in active life management.

Previous research has demonstrated that intergoal conflict is a relevant phenomenon in younger adulthood (Emmons & King, 1988; King et al., 1998; Palys & Little, 1983; Perring et al., 1988; Sheldon & Kasser, 1995). Little, however, is known about intergoal relations in other age groups. Two assumptions shared by various developmental theories (e.g., Erikson, 1959; Jung, 1933; Labouvie-Vief, 1981; Maslow, 1954; Werner, 1967) gave rise to my empirical expectations: First, the assumption that adult development comprises not only developmental losses (e.g., increased susceptibility to illnesses, loss of social partners), but also a potential for developmental gains (e.g., increased life-management competence); second, the assumption that such developmental gain in adulthood is characterized by an increased integration of various aspects of the individual. These propositions led to two main hypotheses of the present study: First, individuals will select more integrated goals as they accumulate life experience throughout adulthood; second, as an

expression of "psychological growth," the selection of more integrated goals will be associated with a higher efficacy in the active management of life.

The subsequent discussion of results is organized around these two main hypotheses. After briefly discussing the finding that intergoal conflict and facilitation are independent, I will focus in the first part of the discussion on the observed age-group differences in the nature of intergoal relations. In the second part, I will discuss the findings on the associations between intergoal relations and various indicators of effective life management. In each of these sections, I will summarize the main results, discuss possible interpretations, outline the strengths and limitations of the present study, and give an outlook for future research. I will conclude this dissertation by linking the results to the theoretical framework of the model of selection, optimization, and compensation, and by outlining four general perspectives for future research.

5.1.   The Independence of Intergoal Conflict and Facilitation

The present study is the first to show that intergoal conflict and facilitation represent two independent characteristics of intergoal relations. Previous research on horizontal intergoal relations employed assessment methods that either exclusively focused on the negative side of intergoal relations (i.e., conflict) and left the possibility of positive intergoal relations (i.e., facilitation) unattended, or, more often, assessed intergoal conflict and facilitation on bipolar response scales (see 2.5.3). The latter assessment strategy assumes that intergoal conflict and facilitation represent different zones along a single dimension.[80] These assessment methods obtained unspecific, holistic evaluations of intergoal relations. They did not provide information on why people perceive their goals as conflicting or facilitative.

One aim of the present study was to develop and apply an assessment method that assesses specific sources of intergoal conflict (i.e., resource constraints and incompatible goal attainment strategies) and intergoal facilitation (i.e., instrumental relations and overlap in goal attainment strategies). This empirical separation of conflict and facilitation made it possible to test empirically the assumption that conflict and facilitation represent

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[80] Only Palys and Little's (1983) assessment method included the possibility that goals might simultaneously conflict with and facilitate each other. In their reported analyses, however, Palys and Little referred exclusively to the unipolar information characterizing the degree of conflict among their participants' goals.

opposite poles on a single dimension (which would have been supported by a strong negative correlation).

In fact, intergoal conflict and facilitation turned out to be two uncorrelated factors (accounting for 75 percent of variance). This was true for the total sample, as well as for the subsamples of younger and older participants (see Table 9). Furthermore, it was evident in the entire set of four goals, as well as with respect to specific goal pairs.

This two-factor structure contradicts the, in the literature generally accepted, assumption that intergoal conflict and facilitation represent opposites poles on a single dimension. What does this mean? To understand this, it helps to disregard for a moment that the levels of intergoal conflict and facilitation vary among individuals. The independence of both relationship characteristics, then, means that it is theoretically possible (although not necessarily the case) that persons perceive their goals as both conflicting and facilitative. Let me illustrate this possibility with a fictitious example. Suppose a person reported the goals "professional success" and "starting regular physical exercise." This person might evaluate exercising as facilitating the work-related goal because exercising might help the person relieve work-related stress and thus enhance his or her working efficacy ("instrumental relationship"). Or the person might exercise with colleagues. Exercising might thus provide an additional context for getting important work-related information ("overlap in goal attainment strategies"). The same person, on the other hand, might also experience that exercising conflicts with the work-related goal, for example, because it takes time that then cannot be spent at the work site ("resource constraints").[81]

Because intergoal conflict and facilitation are independent, a comprehensive assessment of the relations among a person's multiple goals needs to take both relationship characteristics into account. This is possible with the Extended Intergoal Conflict and Facilitation Questionnaire. The psychometric qualities of the questionnaire warranted its application as a research instrument. Item difficulties and item discriminabilities were satisfactory (see Appendix A, Table A 1). Furthermore, the composite conflict and facilitation scales were of high internal consistency (Cronbach's $\alpha \geq .83$). The instrument's properties were stable across both subsamples, which demonstrates its applicability in younger and older adults.

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[81] For reasons of simplicity, this example only involves the impact that pursuing the exercise goal has on the fictitious work-related goal. The complete questionnaire in the present study assessed all 12 possible intergoal relations in the set of four goals.

5.2. Intergoal Relations in Younger and Older Adults

A main hypothesis of the present study was that people, as they grow older and accumulate life-management experience, tend to select less conflicting, and, ideally, more facilitative goals than do younger adults. This prediction was based on three interrelated considerations: (a) Development across adulthood does comprise not only developmental "losses" (e.g., increasing vulnerability for disease and disability), but also a potential for developmental "gains" (e.g., increasing life experience, P. B. Baltes et al., 1998). Various theories share the assumption that such developmental gains in adulthood are characterized by structural change, that is, by an increased integration of various aspects of the individual (e.g., Erikson, 1959; Jung, 1933; Labouvie-Vief & Blanchard-Fields, 1982; Maslow, 1954; see also Werner, 1967). The higher life experience and life-management competence of older adults should therefore be reflected in an improved ability to commit oneself to goals that are organized into an integrated structure (i.e., that do not conflict with, but ideally facilitate each other). (b) Older adults may have a greater freedom in selecting nonconflicting and facilitative goals because sociostructural expectations of "appropriate" goals are less pronounced for later than for earlier phases in adulthood (e.g., Atchley, 1982; Freund et al., 1999; Maddox, 1994; Neugarten et al., 1965; Riley et al., 1994). (c) The with age increasingly salient resource limitations could make it more and more necessary to invest one's resources "economically" into nonconflicting, but facilitative goals (P. B. Baltes, 1987, 1997; Steverink et al., 1998).

The findings of the present study support the hypothesis of age-group differences in the nature of intergoal relations. Older participants, on the average, reported *less* intergoal conflict and *more* intergoal facilitation than did younger participants (see Table 16). The only exception to this age-differential pattern pertained to goal conflict resulting from financial constraints. Here, mean scores of younger and older participants did not differ. This was also the source of goal conflict that was least relevant in both subsamples.

The fact that older adults reported, on the average, less conflict and more mutual facilitation among their goals did not result from including the shared goal "starting to exercise." The relations among the three goals participants had *besides* exercising yielded the same pattern of results. The age-group differences in intergoal relations also did not result from age-group differences in a variety of other person and goal characteristics (e.g., social desirability, ambiguity intolerance, personality traits, resource intensity of goals, see Table 18).

The hypothesis was also supported when only the intergoal relations involving the exercise goal were considered. Here, too, older adults, on the average, reported significantly higher levels of exercise-specific intergoal facilitation and significantly lower levels of exercise-specific intergoal conflict (see Table 26). These age-group differences remained after controlling for age group differences in exercise motivation. Age-group differences in exercise-specific inter-goal conflict only seized to exist after simultaneously controlling for seven other exercise-specific person and context characteristics (i.e., exercise-specific self-efficacy, intention strength, exercise enjoyment, exercise biography, and the degree to which the exercise context provided access to social contact, information and instruction, and wellness facilities). The age-group differences in exercise-specific intergoal facilitation were robust even to these conservative control analyses (see Table 28).

Currently, it is generally accepted that development unfolds in a complex, reciprocal interaction between the person and his or her environment (e.g., P. B. Baltes et al., 1998; Bronfenbrenner, 1988; Lerner & Busch-Rossnagel, 1981). This implies that lifelong development is not as orderly and predictable as classic developmental theories (particularly stage theories) have proposed. There is much heterogeneity within age groups. This heterogeneity was also evident in the present study. Cluster analyses located the age-group difference on the level of within-person configurations of intergoal conflict and facilitation. Three groups of participants were identified: a group that reported low levels of intergoal conflict and high levels of intergoal facilitation, a group that reported low levels of both intergoal conflict and intergoal facilitation, and a group that reported comparatively high levels of intergoal conflict and intermediate levels of intergoal facilitation. Compared to younger participants, older participants were significantly more likely to report highly integrated intergoal relations (i.e., to belong to the "low conflict, high facilitation" group; 7.1% versus 37%, respectively), and significantly less likely to report relatively high levels of intergoal conflict (i.e., to belong to the "high conflict, moderate facilitation" group; 56.6% versus 30.4%, respectively). Although the age-group composition varied, there were younger and older participants in each of the three clusters. In other words, chronological age was a strong, but not perfect predictor of having a highly integrated goal system. This leads to the question which *specific* experiences or life circumstances contribute to the establishment of a system of nonconflicting and facilitative goals. The present study leaves this question open, but I will discuss a number of possibly relevant factors below.

An expression of greater life-management competence might be that older adults are more likely to realistically evaluate which goals they can successfully realize given the available resources. Consequently, older adults might be more likely than younger adults to select goals for which they possess adequate resources. This might contribute to less goal conflict resulting from resource constraints in older than in younger adults. This interpretation is supported by empirical evidence that people, as they grow older, tend to become increasingly flexible about their goals. They tend to give up unattainable goals more easily and to redirect available resources to more realistic goals (e.g., Brandtstädter & Renner, 1990; Heckhausen, 1997).

The greater degree of mutual goal facilitation could indicate that older adults use available resources more efficiently than younger adults. As compared to younger adults, older adults might not only tend more to select goals that are *a priori* more facilitative, but might also be more adept in effectively *combining* the pursuits of multiple goals. They might, for example, actively construct and use instrumental goal relations, or seek contexts and ways that allow several goals to be pursued simultaneously. This interpretation suggests that people might adapt to increasingly salient resource limitations in later adulthood by employing available resources more effectively in the interest of their goals. This could be a mechanism that contributes to the fact that older adults, on the average, report similar (or even higher) levels of psychological well-being than do younger adults, although they live with objectively more pronounced resource limitations (cf. Brandtstädter & Greve, 1994).

An intriguing open question pertains to *strategies* that people employ to prevent or resolve conflict among their goals, and to establish facilitative intergoal relations. In the present study, I had hypothesized that people who habitually tend to (a) set priorities, (b) sequence the pursuit of goals in time, (c) seek and accept compromises, and (d) distance themselves from (some) goals when encountering difficulties in the pursuit of multiple goals, are effective in dealing with, and preventing conflict among their goals. The results did not support this hypothesis. One explanation could be that the assumption that people have "habitual" strategies in the coordination of multiple goals is an oversimplification. It might be more appropriate to investigate the *specific* strategies people employ when dealing with a *particular* set of multiple goals. These specific strategies might be more strongly associated with the nature of intergoal relations within the particular set of goals than was found in the present study.

Intergoal conflict and facilitation might also be related to other characteristics of a person's goals. Older adults, for example, tend to be more selective than younger adults (e.g., Staudinger et al., 1999b). The four goals in this study might therefore have represented a larger proportion of the entire goal system in the older than in the younger participants. Aside from the sheer number of selected goals, another expression of selectivity might be the degree of goal differentiation, that is, the degree to which participants select goals that are different from each other. More selective persons might be more likely to select goals that pertain to few life domains and are therefore similar to each other. Goals of less selective persons might be more dissimilar because they involve more diverse life domains.

Sheldon and Emmons (1995) found that the degree of goal differentiation was associated with the nature of *vertical* goal relations. The more differentiated (i.e., dissimilar) 10 self-reported lower level goals of their student participants were, the less these goals helped attain 10 higher level possible selves (assessed on a bipolar scale ranging from strong negative impact to strong positive impact). Similar associations might exist between the level of goal differentiation and the nature of *horizontal* intergoal relations. Sheldon and Emmons (1995) argued that similar goals can more easily be pursued using the same plan. In other words, similar goals might be more likely to be mutually facilitative because of an overlap in goal attainment strategies. Sheldon and Emmons furthermore proposed that the pursuit of dissimilar goals is more resource intensive than the pursuit of similar goals. That is, dissimilar goals might be more susceptible to goal conflict resulting from resource constraints.

Another possibility is that older adults, because of the less pronounced sociostructural expectations and norms as to what goals they should pursue, are more likely to select goals for intrinsic reasons (e.g., because of the fun and enjoyment the goal provides), rather than for extrinsic reasons (e.g., because of external approval; cf. Ryan & Deci, 2000). An open question is how such intrinsic or extrinsic reasons for selecting goals relate to the nature of intergoal relations.

The persons' life circumstances and available resources might also influence the levels of conflict and mutual facilitation among their goals. An interesting question is whether the observed age-group differences in intergoal relations also exist between younger and older adults who differ less in their objective life circumstances than did the two subsamples in the present study (e.g., to compare younger and older persons who are employed full time).

The present study has two methodological limitations. First, the observed age-group differences were cross-sectional. Consequently, the present study does not provide any information on *intraindividual change* in the nature of intergoal relations as people age. Longitudinal designs are necessary to disentangle age and cohort effects in the development of intergoal relations. Second, the inclusion of a shared goal in the design of the present study resulted in a *highly selective* sample of exercise beginners. Furthermore, the younger subsample consisted largely of students. Perring et al. (1988) argued that the "unsettled role" of students might be a life context that makes conflict among personal goals particularly likely. Representative samples are necessary to investigate whether the observed age-group differences in intergoal relations can be generalized to other populations.

In summary, the present study was the first that investigated age-group differences in intergoal relations. Older participants, on the average, reported more highly integrated goals (i.e., less intergoal conflict and more intergoal facilitation) than did younger adults. These age-group differences did not result from including the shared goal of starting to exercise. They also were not due to age-group differences in a large number of other characteristics. These findings support developmental theories that propose a potential for developmental gains in adulthood, characterized by an increased integration of various aspects of the individual. An important question that remains open is the identification of factors that contribute to the establishment of integrated goal systems. I suggested a number of possible fields of investigation, and emphasized that longitudinal designs and representative samples are necessary to overcome two limitations of the present study.

5.3. Intergoal Relations and Adaptive Life Management

The second main hypothesis of the present study was that committing oneself to nonconflicting and facilitative goals is characteristic of adaptive goal selection and contributes to effective life management. This hypothesis was based on the assumption that a greater integration of personal goals is a facet of developmental gain (or "psychological growth") in adulthood. In the sections below, I will discuss the relevant findings on the various indicators of effective life management employed in the present study. I will start by discussing the associations between intergoal relations and various facets of psychological well-being. Following that, I will discuss the implications of intergoal relations for a person's everyday behavior and experiences, and longer term goal progress. Then, I will

refer to the associations between exercise-specific intergoal relations and longer term exercise adherence. Finally, I will discuss the finding that older adults showed a higher exercise adherence than younger adults in light of the main hypotheses of the present study.

5.3.1. Psychological Well-Being

In the process of life management, people often use their own subjective standards as points of orientation (M. M. Baltes & Carstensen, 1996). Evaluations of how well one is managing one's life are reflected in one's sense of well-being, which therefore is often used as a subjective indicator of effective life management (see 2.2).

As hypothesized, the present study demonstrated that the nature of intergoal relations is associated with several facets of psychological well-being. Particularly interesting is the differential pattern of associations involving intergoal facilitation and intergoal conflict. The degree of *facilitation* among a person's goals was, in essence, unrelated to his or her psychological well-being. In contrast, the degree of intergoal *conflict* was negatively associated with almost all the aspects of psychological well-being considered. Participants with more conflicting goals concurrently reported significantly lower levels of general well-being than participants with less conflicting goals. Longitudinally, however, the degree of intergoal conflict was unrelated to the participant's general well-being four months later. Furthermore, as compared to participants with less conflicting goals, participants with more conflicting goals, both concurrently *and* after about four months, reported being less satisfied with their goals. In addition, participants with more conflicting goals tended to experience less intense positive and more intense negative affect during the diary phase. During that time, they also enjoyed their activities less and disliked them more. The size of these associations was small to moderate ($.22 \leq |r| \leq .44$). The relations involving the short-term evaluations of affective experiences in everyday life (averaged across the entire diary phase), particularly the average intensity of negative affect ($r = .44$), were the strongest.

These findings shed light on the inconsistent results from previous research regarding the association between intergoal relations and psychological well-being. Taking a closer look at previous research had revealed that studies applying *unipolar* assessment methods found that persons with more conflicting goals tend to report lower levels of psychological well-being than do persons with less conflicting goals (Palys & Little, 1983; Perring et al., 1988). This is consistent with the findings in the present study. In contrast, studies applying *bipolar* assessment strategies (i.e., assessing the nature of intergoal rela-

tions on response scales ranging from conflict to facilitation) did not observe such an association (Emmons & King, 1988; King et al., 1998; Sheldon & Kasser, 1995). The findings of the present study show that the latter null-result could be a consequence of the confounded assessment of intergoal conflict (which is negatively related to well-being) and intergoal facilitation (which is not related to well-being). I will later discuss possible explanations for this. First, however, I will address several questions that arise from the observed pattern of associations involving goal conflict: Why was goal conflict related to *general* evaluations of well-being cross-sectionally, but not longitudinally? Why, in contrast, was *goal-specific* satisfaction both cross-sectionally and longitudinally related to goal conflict? Why were the relations strongest with respect to the average *short-term* assessments of affective experiences in everyday life? And what inferences about causality can be drawn from these results?

To evaluate their *general* well-being, people are likely to base their judgement on some standard or point of reference. Such reference points could be the person's current affective state or other chronically or temporarily accessible "suitable" information (Schwarz & Strack, 1999). One possible explanation for the pattern of results involving evaluations of general well-being is that the four goals under study were more salient as reference standards at the first than at the second measurement point. At the first measurement point, participants were most likely to report those goals that were most salient to them at that time. Because the four goals under study only represented a fragment of the person's entire goal system, other reference standards might have been more salient at the second measurement point. In other words, the fact that no longitudinal associations between goal conflict and later evaluations of one's general subjective well-being were found could be a consequence of the fact that the four goals under study did not comprehensively reflect the person's current life situations and aspirations. This explanation seems particularly likely in light of the finding that intergoal conflict was predictive of the participant's goal satisfaction after four months—an evaluation in which the originally reported goals explicitly served as the reference standard.

Another potential reason for a lack of salience of the four goals at the second measurement point might have been that the goals were unstable over time. Empirical findings of the present study contradict this, however. At both measurement times, participants evaluated the current importance of each of the four goals on a scale ranging

from 1 (of very little importance) to 7 (of extraordinary importance). The goal importance ratings four months later typically differed only slightly from the earlier ones.[82]

Another possibility might have been that the perception of the intergoal relations was not stable across the four-months study interval. This cannot be investigated with the present data set because the participants only completed the Extended Intergoal Conflict and Facilitation Questionnaire once. Though little empirical information on the stability of intergoal relations is available, the available information suggests that a moderate change in intergoal relations over time is likely. For example, Emmons and King (1988) reported a one year retest stability of the Striving Instrumentality Matrix of $r = .58$. The malleability of perceptions of intergoal relations is a valuable field for future research. Identifications of antecedents to such changes could be a first step in the creation of intervention programs to help people deal with and resolve goal conflict and establish facilitative intergoal relations.

The explanatory attempts above are based on the implicit assumption that intergoal conflict causes lower levels of well-being. This assumption might be false. Although the negative *longitudinal* relations between intergoal conflict and emotional well-being during the diary phase, as well as between intergoal conflict and goal satisfaction after four months are necessary to conclude causal relations, they are not sufficient. Other explanations of the observed relations are possible (e.g., that both conflict and well-being were caused by other variables). They cannot be ruled out with the correlational information available in the present study. Well-controlled experiments would be necessary to clarify this open question of causality.

Why was goal conflict related most strongly to the average *short-term* evaluations of affective experiences during the diary phase? One possible explanation is that those short-term evaluations were more directly based on the participant's actual experiences than the other well-being ratings. Directions to assess one's affective experiences in the past hours provide much more explicit standards of reference on which to base one's judgements than do the more encompassing directions to evaluate one's general well-being or goal-specific satisfaction (Kahnemann, 1999; Larsen & Fredrickson, 1999). People are quite likely to have a relatively accurate memory of their emotional well-being during the preceding hours and of how much they enjoyed or disliked the activities they had just engaged in. Short-term judgements of affective experiences thus do not require the complex

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[82] Difference T2 minus T1 (averaged across all four goals): $M = -.51$, $Md = -.50$, $SD = .86$

cognitive construals that evaluations with less clearly defined judgement criteria do. As such, short-term evaluations might be less prone to distortions from memory biases, self-protective denial, or cognitive reinterpretation of events (cf. Larsen & Fredrickson, 1999; Schwarz, 1999).

Furthermore, the diary phase took place relatively shortly after the elicitation of the four goals. It seems likely that these goals were still salient and important to the individual during that time. In addition, the diary procedure itself kept the four goals constantly salient for the individuals. Participants rated each reported activity as to if and how relevant the activity was for each of the reported goals. Although participants completed the affect ratings first, it cannot be ruled out that the constant awareness of the four goals influenced the participant's affect ratings. An interesting point for further study is whether the moderate associations between intergoal conflict and short-term evaluations of affective experiences (particularly negative affect) could be replicated with a diary procedure that does not constantly remind the participants of their originally reported goals.

In summary, the degree of intergoal facilitation was unrelated to various indicators of psychological well-being. Intergoal conflict, in contrast, was cross-sectionally and longitudinally negatively associated with various general, goal-specific, and short-term assessments of subjective well-being. I will discuss why this might be the case in the subsequent section.

5.3.2. Everyday Behavior and Experiences

In addition to a person's subjective well-being, other indicators of effective life management are what a person does in everyday life, and how conflicted he or she feels about these activities. Indeed, the diary phase showed that people with different qualities of intergoal relations not only differ with respect to their emotional well-being (as discussed above), but also with respect to how much conflict they experience about which activities to engage in, and how much they actually work on their goals.

The more conflicting and less facilitative participants perceived their goals, the more they reported that they rather *would* or *should* have been doing something else (accounting for 16 and 14 percent of the variance, respectively). These reports of experiencing situational conflict were not just alternative indicators of the relations among the four goals under study. Rather, the observed associations between intergoal relations and situational conflict show that the "abstract" evaluations of intergoal relations assessed by the Extended Intergoal Conflict and Facilitation Questionnaire converged with very "con-

crete" conflict experiences in everyday life situations. They suggest that people with less integrated intergoal relations (i.e., more conflict and less facilitation) were more prone to experience conflict between the more general motivational tendencies "search for pleasure" and "fulfillment of duty" (cf. Higgins, 1996), and thus were more likely to feel that they would rather be doing something else (because that would be more pleasant) or ought to be doing something else (because that would be more responsible).

How about the intensity with which people work on the accomplishment of their goals? The more mutually facilitative the four goals under study were, the more participants reported working on these goals during the diary phase ($r = .37$). In contrast, the degree of intergoal conflict was not associated with the participant's goal involvement.

In all, the diary phase demonstrated, as expected, that the nature of the intergoal relations is related to what people experience and do in their lives. Particularly interesting are the differing relational patterns involving intergoal conflict and facilitation. They lead to the following questions: Why is intergoal *facilitation*, rather than intergoal conflict, associated with the intensity of working on one's goals? And why is intergoal *conflict*, but not intergoal facilitation, associated with people's average emotional well-being in everyday life (see 5.3.1)?

Mutually facilitative goals can be pursued simultaneously. In the diary phase, this was demonstrated by a strong positive correlation between intergoal facilitation and the participants' judgement of their reported activities as furthering *several* of their goals at once ($r = .67$). This indicates that facilitative relations among goals enhance goal pursuit by allowing an efficient utilization of one's limited resources. In light of the finding that older adults tended to select more mutually facilitative goals than did younger adults, the selection of facilitative goals could be seen as reflecting a compensatory strategy to counteract the increasing resource limitations in older adulthood.

That intergoal conflict was unrelated to the intensity of goal pursuit contradicts Emmons and King's (1988) argument that conflict among a person's goals leads to an *inhibition* of goal-directed action. Rather, it seems to be mutual facilitation among a person's goals that leads to an *enhancement* of goal-directed action. This interpretation does not contradict the results in Emmons and King's study, which were based on the total score of the *bipolar* Striving Instrumentality Matrix (SIM). In light of the findings of the present study, it seems likely that the observed negative association between the SIM-composite and goal involvement did not reflect an inhibition of goal-directed activities by

intergoal conflict (as the authors assumed), but rather a lack of enhancement of goal-directed activities by a lack of intergoal facilitation.[83]

Although intergoal conflict was unrelated to the intensity of goal pursuit, it was negatively associated with the participant's emotional well-being during the diary phase. What processes underlie this association? I had hypothesized that the experience of situational conflict and a lack of involvement in the pursuit of one's goals function as mediating instances. This hypothesis was not supported empirically. The only hypothesis-supporting finding was that people with more conflicting goals tended to experience more intense negative affect in their everyday lives, in part, because they experienced situational conflict more often than persons with less intergoal conflict did (see Table 43). Rumination might play a mediating role in the association between intergoal conflict and impairments in psychological well-being. Emmons and King (1988) found that people tend to ruminate more about highly conflicting goals than about goals that are less conflicting (assessed with the bipolar Striving Instrumentality Matrix). Rumination, in turn, has been repeatedly found to be associated with negative affect and unhappiness (e.g., McIntosh, 1996; McIntosh & Martin, 1992; Nolen-Hoeksema, 2000).

Why was intergoal facilitation unrelated to people's emotional well-being in everyday life (if aggregated across the entire diary phase)? This is particularly interesting in light of the findings that people with more facilitative goals tended to experience less situational conflict and to work more on their goals than people with less facilitative goals did. Furthermore, both experiencing situational conflict and being involved in goal pursuit were associated with the participants' short-term emotional well-being. During diary periods in which participants had engaged in at least one activity that was not what they would or ought to be doing, they did not feel as good emotionally as they did during periods in which they had not experienced such situational conflict. Also, the more participants had engaged in activities furthering their goals, the more positive and the less negative affect they experienced during these hours. Overall, these predictors accounted for 10 and 12 percent of the variance in short-term positive and negative affect, respectively. These associations also remained after controlling for the participant's average positive and negative affect during the diary phase. This means that the experience of situational conflict and the involvement in goal-relevant activities was not only associated with the

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[83] Note that this illustrates the necessity of separating the assessment of intergoal conflict and facilitation for an unambiguous interpretation of results.

absolute level of short-term emotional well-being, but also accounted for within-person fluctuations in short-term emotional well-being above and below the person's average. These results are in agreement with a number of previous studies demonstrating that people show more pronounced affective reactions to events that are related to their goals than to goal-unrelated events (e.g., Cantor et al., 1991; Emmons, 1991; Lavallee & Campbell, 1995). Again, on the basis of purely correlational information, the issue of causality cannot be resolved. For example, the question remains whether participants reported less emotional well-being because they experienced situational conflict and (a lack of) involvement in the pursuit of their goals, or whether they were more inclined to report situational conflict and (lack of) goal involvement for those periods during which they felt emotionally not as good.

But why did these associations not result in a positive association between intergoal facilitation and people's *average* emotional well-being in everyday life? A possible explanation is that the four goals under study only represented a small proportion of the participant's goal system. A more comprehensive assessment of the interrelations among the multiple goals of an individual might be necessary to observe an association between intergoal facilitation and psychological well-being.

In summary, there was a differential pattern of associations between the two goal-relation characteristics, intergoal conflict and intergoal facilitation, and the various characteristics of everyday life experiences and behavior (as indicators of effective life management). Intergoal *conflict*, rather than intergoal facilitation, was associated with lower emotional well-being. Furthermore, both intergoal *conflict* and *facilitation* were associated with the tendency to experience situational conflict. Participants with more conflicting and less facilitative goals tended to experience more often that there was something else they would have rather been doing or ought to have been doing instead of the activity they were engaged in. Finally, intergoal *facilitation*, rather than intergoal *conflict*, was associated with the tendency to engage in goal-relevant activities during the diary phase. Participants with more facilitative goals also tended to engage more in activities that furthered several of their goals at once. This finding shows that facilitative goal relations allow an efficient usage of one's limited resources in the interest of one's goals. Accordingly, the higher integration of personal goals in older adulthood might represent an adaptation to increasingly salient resource limitations.

5.3.3. Longer Term Goal Progress

Another indicator of effective life management is the degree to which people progress toward the attainment of their goals. Younger and older adults differed from each other with respect to the association between intergoal relations and subjective goal progress. In the younger subsample, the nature of intergoal relations at the first measurement point was unrelated to the degree of self-reported goal progress reported after four months. In contrast, in the older subsample, the more intergoal facilitation participants reported during the first questionnaire session, the more goal progress they reported during the second ($r = .41$). In other words, older adults not only tended to have more facilitative goals, but also to "benefit" more from positive goal relations (in terms of their subjective goal progress) than younger adults did. When intergoal facilitation was controlled for, the degree of goal conflict was not predictive of the self-reported goal progress in either subsample.[84]

Why did the degree of intergoal facilitation predict subjective goal progress in the older, but not in the younger subsample? A possible explanation is that facilitative goal relations—that allow an efficient usage of one's resources in the interest of one's goals (see 5.3.2)—fulfill a compensatory function in counteracting increasing resource constraints. As I discussed before, one such efficient resource utilization is to pursue several goals simultaneously. The advantages of facilitative intergoal relations might become particularly effective in promoting goal progress when available resources fall below a certain critical level. In the younger subsample, this level might not have been reached.

A similar finding was that the degree of intergoal conflict was, at the first measurement time, negatively associated with evaluations of one's habitual positive affect during the preceding months in the older ($r = -.40$), but not in the younger subsample. This finding further supports the interpretation that it might become increasingly important to invest one's resources "economically" into nonconflicting and facilitative goals in older adulthood. These buffering effects of integrated intergoal relations might be even more

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[84] Note that the findings in the older subsample are a further demonstration of the differential relations between intergoal conflict and facilitation and indicators of successful life management. They correspond with the finding that intergoal facilitation (and not intergoal conflict) was associated with the participants' everyday involvement in the pursuit of their goals. This is not surprising given the fact that the more participants reported to work on their goals during the diary phase, the more goal progress they reported after about four months ($r = .30$, for detailed analyses, see Chojnowska, 2001).

pronounced in populations of older adults with more severe resource limitations than in the present sample of relatively "young" and active elderly.

5.3.4. Exercise Adherence

The results discussed so far were based exclusively on the participant's self-report. An exclusive reliance on self-reported information bears the risk of observing statistical associations that are artificially enhanced because of shared method variance (i.e., response tendencies within individuals), particularly if the measures were obtained within a relatively short period of time.[85] A main question in the present study was whether the observed associations between intergoal relations and goal involvement could be replicated with *objective* information on the participant's *longer term* goal involvement. To meet this aim, the design of the present study included the shared goal of starting regular physical exercise.

As expected, the nature of the relations between the exercise goal and the participant's other three goals was associated with the participant's average exercise behavior in the study interval (accounting for six to ten percent of the variance in various exercise behavior characteristics, see Table 30). Similar to the findings in the diary phase, the degree of exercise-specific intergoal *facilitation* was a more important predictor of longer term exercise adherence than the degree of exercise-specific intergoal *conflict*. The degree of exercise-specific intergoal *conflict* nevertheless contributed significantly to some of the assessed characteristics of longer term exercise adherence.

Specifically, participants who initially reported higher levels of exercise-specific intergoal *facilitation* reported a greater average exercise duration, regularity, and frequency than participants reporting less initial exercise-specific intergoal facilitation. They also tended to attend their exercise facility more often (according to objective attendance information). Participants with a higher initial level of exercise-specific *conflict* tended to exercise less regularly, to realize their originally intended monthly exercise rate to a lesser degree, and to attend their sports facility less often than participants with less initial exercise-specific conflict. Furthermore, participants who reported that they continually exercised at least once a week throughout the five calendar months of the study interval ("persistent exercisers," 54.2% of the sample) reported a higher level of initial exercise-

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[85] Note, however, that there was no content overlap in the items assessing intergoal relations and the various dependent variables.

specific intergoal facilitation than participants who reported that they had not exercised at all in the last two calendar months of the study interval ("exercise drop-outs," 16.9% of the sample; $\eta^2 = .06$). Both groups did not differ significantly in their initial level of exercise-specific intergoal conflict.

The exercise-specific investigation of the present study has a number of methodological characteristics that allow a relatively reliable conclusion of a causal relationship between intergoal relations and longer term exercise adherence: At the beginning of the study, all participants shared the goal of starting regular physical exercise. In the course of the measurement interval, differences in exercise behaviors evolved. Exercise-specific intergoal relations, assessed at the first measurement point, were predictive of these behavior variations occurring later in time. This pattern suggests that intergoal relations are an antecedent to longer term goal realization.

From a health-psychological perspective, results of the present study emphasize the importance of personal goals for longer term adherence to health behavior change. The results support recent trends in health psychology that increasingly acknowledge the roles that setting and pursuing personal goals play in the adoption and maintenance of health behaviors (Karoly, 1990; Maes & Gebhardt, 2000; Schwarzer, 1999). As I discussed in section 2.11.2, two main "traditional" perspectives in health-psychological theories can be distinguished: theories that primarily focus on determinants of the *intention* to change one's health behavior (e.g., Ajzen, 1988; Becker, 1974; Fishbein & Ajzen, 1975; Rogers, 1983), and theories that primarily focus on the process of *implementing* such intention (e.g., Marlatt, 1985; Prochaska & DiClemente, 1986). Recently, health psychologists have started to integrate both perspectives into more comprehensive models (health behavior goal model, Gebhardt, 1997; health action process approach, Schwarzer, 1999). Theoretically, the relations between a target health behavior and other important goals of the individual might be among the factors that enhance (in the case of intergoal facilitation) and impede (in the case of intergoal conflict) both intention formation *and* intention realization. The present study provided empirical evidence for the latter.

The findings of the present study support one of the recent integrative models of health behavior change, the health behavior goal model (Gebhardt, 1997; Maes & Gebhardt, 2000). This model emphasizes explicitly the significance of conflict between a target health behavior and the person's other important goals. The empirical studies available to date that have provided preliminary support for this model were characterized by a number of methodological shortcomings. They relied exclusively on self-reported health

behaviors, and utilized either indirect (Gebhardt, 1997; Gebhardt & Maes, 1998) or retrospective (McKeeman & Karoly, 1991) assessments of conflict between the health behavior and the other goals of the individual. The present study implemented several methodological improvements. It included *objective* information on the participants' exercise behavior, directly assessed the degree of exercise-specific intergoal conflict *and* of exercise-specific intergoal facilitation, and employed a *prospective* design.

The observed associations between exercise-specific intergoal conflict and some of the exercise behavior characteristics are in accord with the propositions of the health behavior goal model. Positive (i.e., facilitative) intergoal relations appeared to be even more strongly related to longer term exercise adherence than goal conflict was. This finding suggests that theoretical models of health behavior change would benefit from incorporating the notion of conflicting *as well as* facilitative relations between the health behavior and the person's other important goals. From a health-psychological perspective, a promising research field would be the investigation of antecedents to mutual facilitation and conflict between a health behavior and other important goals of the individual. The identification of such antecedents could provide a first step to the development of intervention methods that would support people in realizing a desired health behavior. Such health promotion programs might be an area to apply knowledge on the role that intergoal relations play in successful life management.

A characteristic of the present study was the large exercise-specific heterogeneity of the investigated sample. Recruited in 28 different sports facilities, the sample was heterogeneous with respect to exercise contexts, kinds of sport, and previous exercise experience (see Table 5). An advantage of this design is that the observed effects cannot be attributed to a particular kind of sport. Limitations, however, are potentially distorting effects of, and particularly age-group differences in, exercise-specific characteristics. To control for these, exercise-specific person and context characteristics were thoroughly assessed. Specifically, detailed information was obtained on the participant's exercise motivation, exercise-specific self-efficacy, intention strength, exercise enjoyment, exercise context, exercise biography, as well as on the duration of the current phase of exercising. The above described associations between exercise-specific intergoal relations and the participant's exercise behavior were relatively robust to separately controlling for the various exercise-specific rival predictors. Nevertheless, an approach preferable to controlling for potentially distorting influences of exercise-specific characteristics would be to recruit

more homogeneous samples (ideally, people at the same exercise stage entering the same exercise program).[86]

To summarize, the more participants evaluated their exercise goal as helping their other three goals (and vice versa), and the less they perceived conflict between the exercise goal and their other goals, the more persistently they tended to exercise during the subsequent four months. Exercise-specific intergoal facilitation tended to be a more important predictor of the participant's longer term exercise behavior than exercise-specific intergoal conflict. These findings correspond with the above discussed results of the diary phase. They show that the nature of the relations among a person's goals affects the intensity with which the individual works on realizing these goals. This demonstrates how the SOC-processes *interact* with each other: Intergoal relations, as a characteristic of the selection principle, influence the effectiveness of goal pursuit (i.e., optimization or, in the case of the loss of previously accessible resources, compensation). The present study demonstrated this association for self-reported and objective goal involvement, within a time period shortly after the assessment of intergoal relations as well as within a longer time period of about four months. From a health-psychological perspective, the findings discussed emphasize that considering the relations between a target health behavior and other important goals of an individual might represent a pathway to understanding, and eventually supporting the adoption and longer term maintenance of health behaviors.

5.3.5. Age-Group Differences in Exercise Adherence

Older participants in the present study showed a higher exercise adherence throughout the study interval than younger participants did. Specifically, older participants reported a higher average exercise regularity, realized a higher percentage of their originally reported monthly exercise frequency, and, according to objective attendance data, attended their sports facility more often. Furthermore, older adults were significantly more likely to belong to the group of persistent exercisers (i.e., to have exercised at least once a week throughout the entire study interval), and significantly less likely to belong to the group of exercise drop-outs (i.e., to not have exercised at all during the last two calendar months of the study interval). In short, older adults in the present sample were more effective in maintaining their desired change in lifestyle over a longer period of time than were younger adults.

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[86] Note, however, that such a design would have the disadvantage of a limited generalizability of results.

These findings support the assumption, shared by various developmental theories (see 5.2), of a psychological growth potential (or, more specifically, an increasing life-management competence) in adulthood. A particularly interesting question is what role the nature of intergoal relations plays in this respect. Indeed, there was preliminary (although not unequivocal) indication that, compared to younger adults, the higher persistence of older adults in realizing their exercise goal resulted from their exercise goal being more facilitative for, and less conflicting with their other three goals (and vice versa). Specifically, age-group differences in the *objective* exercise frequency were completely accounted for by initial age-group differences in exercise-specific intergoal conflict and facilitation. Note, however, that this finding was not replicated for the *self-reported* exercise behavior. A potential explanation for this is that factors influencing subjective reconstructions (e.g., memory biases, response tendencies, retrospective reinterpretations) differentially affected the self-reports of exercise behavior in younger and older adults. These factors might have contributed to age-group differences in the self-reported exercise behavior above and beyond the influence of age-group differences in exercise-specific intergoal relations. Consequently, empirical replication is necessary to substantiate the finding that more integrated intergoal relations might play a decisive role in supporting a higher exercise adherence in older adults. An important open question pertains to the generalizability of these findings to the realization of goals in other life domains.

5.4. Conclusions

The main research interest of the present study was the question of how people actively, within biological, societal, and resource constraints, influence their own development. The action-theoretical conceptualization of the model of selection, optimization, and compensation (Freund & P. B. Baltes, 2000) served as the theoretical framework for approaching this question. This model proposes that people, through the selection of personal goals, give direction to their lives. Through investing effort and other resources (i.e., optimization or, in the case of loss of previously available goal-relevant resources, compensation), they influence their life course in aspired directions. The starting point of the present study was the assumption that not all expressions of selection, optimization, and compensation are equally adaptive. I concluded that it is necessary to identify characteristics of adaptive implementations of the SOC-principles in order to understand how people at various ages influence their own development.

In this vein, the present study demonstrates that the nature of relations among a person's multiple goals is a characteristic that differentiates more adaptive from less adaptive expressions of the *selection* principle. Applying a new assessment method, the study found that two independent properties characterize the relations among a person's multiple goals: The degree to which a person's goals *conflict* with each other, and the degree to which these goals *facilitate* each other. Both intergoal conflict and facilitation are associated with indicators of effective life management. Intergoal conflict is negatively related to psychological well-being. Intergoal facilitation is associated with an increased intensity of working on one's selected goals. Older adults tend to select more integrated (i.e., less conflicting and more facilitative) goals than do younger adults. This reflects their more efficient utilization of available resources, and might be an adaptation to increasingly salient resource limitations.

Altogether, the findings of the present study support developmental theories that propose that adult development is not only characterized by developmental losses, but also by a potential for developmental gains characterized by an increased integration of various aspects of the individual (e.g., Erikson, 1959; Jung, 1933; Labouvie-Vief & Blanchard-Fields, 1982; Maslow, 1954; see also Werner, 1967). The present study supports such theories in two ways. First, the fact that older adults tend to select less conflicting and more facilitative goals than do younger adults is an illustration of the higher integration (in this case, of personal goals) in later adulthood. Second, the fact that a higher integration of personal goals is positively associated with indicators of effective life management (i.e., psychological well-being, goal involvement) demonstrates that it is indeed a characteristic of positive development.

Three general conclusions can be drawn from the present study: (a) Studying personal goals and goal-directed activities is a promising path to understanding how individuals actively influence their development. This is in accord with the propositions of the action-theoretical specification of the model of selection, optimization, and compensation. (b) Not all implementations of setting and pursuing personal goals (i.e., selection, optimization, compensation) are equally adaptive. Consequently, it is particularly the identification of *adaptive* expressions of the SOC-principles that enhances the understanding of how people influence their own development within biological, societal, and resource constraints. (c) In this vein, selecting nonconflicting and facilitative goals is a characteristic of adaptive implementations of the selection principle in active life management.

5.5. Outlook

In the preceding sections, I already suggested a number of ways in which the research of the present study could be continued and improved in the future. This concluding section briefly sketches four, more general, future research perspectives. Specifically, I propose that the understanding of developmental regulation could be enhanced by future research on (a) the *"positive side"* of goal conflict in developmental regulation, (b) the role of *not consciously accessible* motivational tendencies and their interrelations, (c) the relations among goals of *different* individuals, and (d) the *cross-cultural* comparability of the role of goals and goal-directed action in active life management.

The "positive side" of goal conflict in developmental regulation. Focusing on the negative association between intergoal conflict and psychological well-being, the present study did not attend to potential positive aspects of conflict in developmental regulation. It has been argued repeatedly that the acknowledgement, confrontation, and eventual solution of intraindividual conflict might play an important role in stimulating developmental growth (e.g., Brim & Kagan, 1980; Erikson, 1959; Riegel, 1975; Turiel, 1974; Vaillant, 1977). Empirical research on this proposed positive role of conflict in developmental regulation is rare. The study of ontogenetic change in intergoal conflict and its solution might be a suitable way to investigate this question. For example, the impairments in psychological well-being associated with intergoal conflict might initiate attempts to resolve the conflict, and thus, in the long run, promote the attainment of a more integrated goal system. Developmental theorists have repeatedly argued that such an increased integration of various aspects of the individual is a characteristic of developmental gain in adulthood (e.g., Erikson, 1959; Jung, 1933; Labouvie-Vief & Blanchard-Fields, 1982; Maslow, 1954; see also Werner, 1967). The present study empirically supports this proposition.

The role of not consciously accessible motivational tendencies and their interrelations. The present study assumed that people's consciously represented goals play an important role in their development. Furthermore, the direct assessment method of intergoal relations in the present study presupposed that people are able to accurately reflect on the degree of conflict and facilitation among their goals. Consciously accessible goals, however, are only a small proportion of the motivational tendencies that have implications for a person's development. There might also be limitations in the accuracy with which people evaluate the nature of relations among their goals. For example, "self-deceptive" processes (Sackheim, 1983), directed at the avoidance of negative affect and the augmentation or

protection of one's self-esteem, might limit the awareness of one's potentially conflicting goals (Emmons et al., 1993). Employing indirect assessment methods in future research would allow to investigate the roles that nonconscious motivational tendencies and their interrelations play in developmental regulation.

Relations among the goals of different individuals. The present study exclusively focused on relations among goals *within* the same individual. Human development, however, occurs in a social context. Investigating relations among the goals of *different* individuals (e.g., within partnerships or families; see, Argyle et al., 1981; Laursen, in press; Wilensky, 1983) might provide additional insights into how personal goals influence development. For example, interrelations of goals on this larger level of analysis might have implications for the intergoal relations within individuals. If a goal is shared by several individuals, they all might contribute important resources to attaining it. For these individuals, this particular goal might be less conflicting with other personal goals than for individuals who have to provide all necessary resources on their own. Another interesting question is how interrelations among goals of different individuals relate to the developmental success of the larger social entity (e.g., partnership satisfaction and duration). This question also raises the issue of strategies and intervention methods that might help people organize their goals collectively into an integrated (i.e., nonconflicting, facilitative) structure. The investigation of these questions would be an interesting approach to test the proposed applicability of the SOC-model on levels of analyses other than the single individual (e.g., dyad, family; see Marsiske et al., 1995).

Cross-cultural comparability of the role of goals and goal-directed action in active life management. The SOC-model proposes that selection, optimization, and compensation are universal principles of developmental regulation. It also asserts that phenotypic implementations of the processes might vary in content. This implies that personal goals and goal-directed action play a universal role in developmental regulation, but that the specific content of the selected goals and goal-directed behavior might differ greatly among cultures. It has been argued that this theoretical view that people generally are agents influencing their own development reflects a culturally biased perspective on developmental regulation (Pulkkinen, 2000). Cross-cultural research is necessary to provide insights into both the proposed culture-independent universality of the SOC-principles and their culture-specific phenotypic implementations.