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4

Interference and Facilitation Among Personal Goals: Age Differences and Associations With Well-Being and Behavior

Michaela Riediger

Some years ago, I went to a New Year's party with my friend Barbara. It was midnight. Glasses were clinking, people were hugging, but Barbara was not there. Minutes later I found her, alone in some corner, writing. She told me that she had written down her New Year's resolutions. "Just to make sure that I don't forget. You know, I realized that there are quite a few things that I want to do next year," she said, and showed me her pocket diary. She had scribbled a long list of goals all over the front cover: Lose 10 pounds! Write a really good dissertation! Become fluent in Spanish! Travel to South America! Exercise three times a week! More time with friends! Call home once a week! Enjoy life! "Well," she sighed, "I will have to give it more thought. Some of this goes really well together. But then again, I wonder if I will have enough time for everything." She looked at her watch. "Oh no! It's past midnight already," she exclaimed startled, "Let's get back to the party! Happy New Year!"

When people think about what they want to attain or avoid in their future, they typically realize that they have multiple goals, perhaps pertaining to different domains of their lives. Such multiple goals are not always independent of each other. As probably everybody knows from their own experiences, goals may interfere with each other. Examples are Barbara's goals to write a really good dissertation and to become fluent in Spanish. Pursuing one goal may take away time and energy from pursuing the other goal. Goals, however, may also mutually facilitate each other. Pursuing the goal to travel to South America, for example, may offer Barbara many good opportunities for pursuing her goal to become fluent in Spanish.

The purpose of this chapter is to review empirical evidence on *intraindividual* relations among different goals of an individual.[1] It starts with definitions of intergoal facilitation and interference and a brief clarification of a basic conceptual question: Are intergoal facilitation and interference opposites on a single dimension, or are they distinct characteristics? Following that, three topics of empirical research on intergoal relations are reviewed. This review begins with the most prominent theme thus far, namely, potential associations between intergoal relations and people's psychological well-being. I summarize the partly inconsistent findings and propose an explanation that may reconcile the differences. The second topic addresses associations between intergoal relations and people's actual behavior or action, a theme that is receiving increasing attention. This section presents research that has investigated implications of intergoal relations for people's active involvement in goal pursuit. The third topic has only recently been investigated in research on intergoal relations. Joining a developmental and a motivational perspective, it addresses adulthood changes in intergoal relations and their potential developmental-regulatory functions. Following a discussion of this recently emerging line of research, I conclude the chapter by integrating the re-

[1]Related topics that are not within the scope of this chapter are (a) ambivalence toward single goals; that is, an approach–avoidance conflict a person might have about a goal (i.e., wanting and at the same time not wanting to attain it; Emmons & King, 1988; Emmons, King, & Sheldon, 1993); (b) relations between goals and broader motivational themes, such as possible selves, needs, or motives (e.g., Brunstein, Schultheiss, & Grässman, 1998; Kehr, 2004; McGregor & Little, 1998; Omodei & Wearing, 1990; Schultheiss & Brunstein, 1999; Sheldon & Emmons, 1995); and (c) relations between goals of different persons (e.g., Argyle, Furnham, & Graham, 1981; Lewis, Reitsma, Wilson, & Zigurs, 2001) or between individual and team or organizational goals (e.g., DeShon, Kozlowski, Schmidt, Milner, & Wiechmann, 2004; Kristof-Brown & Stevens, 2001).

search reviewed and outlining future research perspectives. Figure 4.1 depicts the central topics that are discussed in this chapter.

As is typically the case in goal research, the studies reviewed in this chapter partly employed different theoretical goal concepts, such as personal projects (Little, 1983) or personal strivings (Emmons, 1986). For the sake of the flow and clarity of argumentation, and because several authors have proposed that the various theoretical goal concepts are largely comparable on an empirical level (e.g., Brunstein, 1993; Kehr, 2003; Omodei & Wearing, 1990), this chapter treats the goal concepts in the reviewed studies as more or less equivalent.

THE CONCEPT AND MEASUREMENT OF INTERGOAL RELATIONS

Theoretically, three different qualities of relations among an individual's goals (or, more precisely, the impact of pursuing one goal on the pursuit of another goal) are possible: (a) independence, (b) facilitation, and (c) interference (Argyle, Furnham, & Graham, 1981; Little, 1983).

Goal independence refers to a constellation of goals in which the pursuit of one has no impact, either positive or negative, on the pursuit of any other goal of the individual.

Intergoal facilitation occurs when the pursuit of one goal simultaneously increases the likelihood of success in reaching another goal. It may result, for example, from instrumental relations among goals (Riediger & Freund, 2004; Wilensky, 1983). These exist when progress toward one goal also represents a step toward another goal (e.g., when

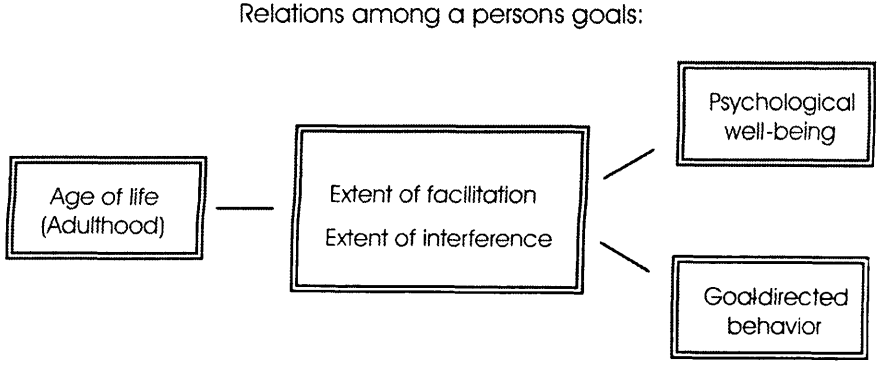

Figure 4.1. Overview of topics reviewed in this chapter.

being successful in establishing a professional career generates resources for financially supporting one's partner). Intergoal facilitation may also result from overlapping goal attainment strategies (Riediger & Freund, 2004; Wilensky, 1983). These exist if strategies for pursuing one goal represent a subset of strategies for pursuing another goal (e.g., when exercising regularly is effective for both improving one's cardiovascular fitness and improving one's appearance).

Intergoal interference occurs when the pursuit of one goal impairs the likelihood of success in reaching another goal. This phenomenon has also been referred to as *goal conflict.* To stay within the terminology used by the various authors, the terms *interference* and *conflict* are used interchangeably throughout this chapter. Interference among goals may result, for example, when the pursuits of different goals of an individual require the same limited resource, such as time or money, of which an insufficient quantity is available. Intergoal interference may also occur when the strategies for attaining different goals are incompatible (Greenhaus & Beutell, 1985; Riediger & Freund, 2004; Wilensky, 1983). "To keep my relationships on a 50–50 basis" and "to dominate, control, and manipulate people and situations" are examples of two conflicting goals cited by Emmons and King (1988, p. 1042) that imply such an inherent logical incompatibility.

The research reviewed in this chapter employed different methods for assessing interrelations among personal goals. Two general approaches can be distinguished: a bipolar assessment strategy, which anchors both negative or interference and positive or facilitation impacts as opposite ends of the same scale, and a unipolar approach, which measures the degree of interference or facilitation on the scale and requires two separate scales if both interference and facilitation are to be assessed. As I elaborate later, both strategies partly yield different empirical results. To provide the basis for an adequate reflection of these findings, a brief illustration of the history of both assessment strategies and a discussion of the central conceptual question that distinguishes them follows: Are intergoal conflict and facilitation mutually exclusive opposites, or are they distinct characteristics of the interrelations among a person's goals?

INTERFERENCE AND FACILITATION AMONG GOALS DO NOT EXCLUDE EACH OTHER

To date, the majority of research on intergoal relations has been based on the assumption that interference and facilitation among goals are

mutually exclusive opposites. This assumption may be intuitively appealing at first glance. Empirical evidence, however, suggests that facilitation and interference among goals are more adequately conceptualized as two independent dimensions: Goals might interfere with each other in some aspects, but facilitate each other in others. For example, a person might perceive the goal of exercising regularly to facilitate her other goal of professional success because exercising might help with relieving stress and thus enhance efficacy at work. At the same time, she might also experience exercising to interfere with the work goal because it takes time that cannot be spent working. This part of the chapter briefly discusses this issue and its implications for the assessment of intergoal relations and the interpretation of research results.

To my knowledge, the first attempt at assessing interrelations among a person's goal was published by Little (1983) and accounted for the possibility that two goals might be both interfering and facilitative. Using this approach, participants first report a certain number of current goals (or personal projects, in this case). They then complete a cross-impact matrix, the rows and columns of which are labeled with short summary phrases of the reported projects. Each cell of this matrix represents a pair of two projects. Participants decide whether carrying out the project indicated by the column has a positive, negative, neutral, or ambivalent (i.e., both positive and negative) impact on the project indicated by the row, and they write their responses into the respective cell (see Figure 4.2).

The assumption that a goal may have both a positive and a negative impact on another goal was later dropped by researchers introducing bipolar assessment procedures, which presuppose intergoal facilitation and interference to be mutually exclusive opposites. An example is the striving instrumentality matrix (SIM) by Emmons and King (1988), which has been frequently adapted (e.g., Kehr, 2003; King, Richards, & Stemmerich, 1998; Michalak & Schulte, 2002; Sheldon & Kasser, 1995). Again, participants first report a certain number of goals, pair each of these goals with each of the remaining goals, and rate the pairwise goal relations. This time, however, participants rate the impact that being successful in one goal has on the other goal using a scale ranging from –2 (*very harmful*), to 0 (*no effect*), to +2 (*very helpful;* see Figure 4.2). This scale has been interpreted in different ways. Most researchers recoded responses so that higher scores indicate more unfavorable intergoal relations, and interpreted the average of these ratings as indicating the extent of conflict among the participant's goals (e.g.,

Step 1: Free reports of personal goals (strivings, projects)

Step 2: Pairwise combination of all reported goals

Example (3 goals):

	Goal A	Goal B	Goal C
Goal A	-	BA	CA
Goal B	AB	-	CB
Goal C	AC	BC	-

Step 3: For each pairwise goal combination, assessment of intergoal relation:

Example 1: Cross-Impact Matrix (Little, 1983)

What impact does carrying out the first project have on the second project?

−+	−	+	+ +	0	+/−
(very negative)	(negative)	(positive)	(very positive)	(neutral)	(ambivalent)

Example 2: Striving Instrumentality Matrix (Emmons & King, 1988)

What effect does being successful in the first striving have on the second striving?

− 2	− 1	0	+ 1	+ 2
(very harmful)		(no effect)		(very helpful)

Example 3: IntergoalRelations Questionnaire (Riediger & Freund, 2004)

(a) Interference:

How often can it happen that , because of the pursuit of Goal A, you do not invest as much time/money/energy into Goal B as you would like to?

How often can it happen that you do something in the pursuit of Goal A that is incompatible with Goal B?

(b) Facilitation:

How often can it happen that you do something in the pursuit of Goal A that is simultaneously beneficial for Goal B?

The pursuit of Goal A sets the stage for the realization of Goal B.

1	2	3	4	5
(very rarely/ not at all true)				(very often/ very true)

Figure 4.2. Assessment of intergoal relations: Comparison of different approaches at the example of three instruments.

Emmons & King, 1988; Kehr, 2003; King et al., 1998). Michalak, Heidenreich, and Hoyer (2004), however, pointed out that the scale means reported in various studies are too low to warrant an interpretation as indicator of goal conflict. They argued that, "the SIM seems to be a method of assessing a greater or lesser degree of integration between a person's goals rather than a measure of intrapsychic conflict" (p. 91). In line with this, Sheldon and Kasser (1995) recoded responses such that higher scores indicate more favorable intergoal relations and interpreted this SIM composite as an indicator of coherence among goals.

To date, bipolar assessment methods have been very prominent in research on intergoal relations. Some studies, however, employed unipolar measures, typically of intergoal interference only (e.g., McKeeman & Karoly, 1991; Pomaki, Maes, & ter Doest, 2004). An example of a unipolar instrument that assesses both interference and facilitation among goals is the Intergoal Relations Questionnaire (IRQ; Riediger & Freund, 2004). Participants respond, for each possible pair of their self-reported personal goals, to six unipolar items (see Figure 4.2, Example 3). Interference among goals is assessed in terms of resource constraints (time, financial, and energy constraints) and in terms of incompatible goal attainment strategies. Mutual facilitation among goals is assessed in terms of instrumental goal relations and overlapping goal attainment strategies.

Whereas some measures leave it to the participants to decide on which criteria to base their judgment of interference or facilitation, the IRQ specifies explicit reference standards (i.e., specific forms of intergoal interference and facilitation), which presumably enhances the interindividual comparability of responses. Furthermore, the unipolar assessment approach of the IRQ allows empirical testing of the association between intergoal interference and facilitation. In fact, in two independent adult samples ($N_1 = 111$, $N_2 = 145$), Riediger and Freund (2004) found a clear two-factor structure of intergoal facilitation and interference. Correlations between the respective facilitation and interference composite scores were small ($| r | \leq .19$). Interestingly, the cross-impact matrix (Little, 1983) shows a similar two-dimensional structure: The positive impact score (facilitation) and the negative impact score (interference) are independent of each other (B. R. Little, personal communication, December 2, 2004).

These findings indicate that it is possible (although not necessarily the case) that two or more of an individual's goals can interfere with each other, while also being mutually facilitative. A bipolar instrument

cannot unambiguously reflect such a constellation. Its midpoint, for example, could signify either that two goals are neither interfering nor facilitative or that they are about equally interfering and facilitative.

In short, intergoal conflict and facilitation appear to be most adequately conceptualized as distinct characteristics. The reviews of empirical results in the following two parts of this chapter further support this conclusion. These findings show that intergoal interference and facilitation are differentially related to subjective well-being and persistent goal pursuit.

INTERGOAL RELATIONS AND PSYCHOLOGICAL WELL-BEING

Throughout the history of psychology, it has been repeatedly theorized that intraindividual conflict is linked to negative experiences both in the pathological and in the nonpathological range, and that psychological health and well-being require that different aspects of the person are harmoniously integrated (for reviews, see Epstein, 1982; Hoyer, 1992; McReynolds, 1991). Applied to interrelations among personal goals, these propositions suggest that interference among goals should impair, and mutual facilitation among goals should enhance, psychological well-being. The available empirical evidence, however, is not as clear as one might expect (and as it is sometimes described to be; e.g., Emmons, Cheung, & Tehrani, 1998; Kehr, 2003). Next, I briefly summarize the available findings and propose an explanation for the inconsistent pattern of results. This review first addresses research using bipolar assessment scales of intergoal relations and then turns to research using unipolar scales. For the sake of brevity, it is restricted to studies that assessed interrelations among personal goals specifically and directly. It does not include studies that investigated interrelations among other psychological concepts (e.g., Hoyer, 1992; Lauterbach, 1996), nor does it include studies that inferred intergoal relations indirectly without assessing the participants' goals (e.g., Perring, Oatley, & Smith, 1988).

Research Using Bipolar Assessment Strategies

Overall, the empirical picture provided by studies using bipolar assessment instruments is not very clear. Emmons and King (1988) reported a

series of studies that did not yield consistent results concerning the association between the bipolar SIM, described earlier, and various indicators of mental health. In a first study (N = 40 undergraduates), the SIM composite (interpreted by the authors as an indicator of goal conflict) was unrelated to measures of positive affect, but was positively related to negative affect (r = .28), anxiety (r = .29), and depression (r = .34). In a second study (N = 48 undergraduates), the authors did not replicate the associations with negative affect, anxiety, and depression.

A number of other authors also found no associations of the SIM with indicators of psychological well-being. Sheldon and Kasser (1995), in a sample of 161 psychology students, found no association between the SIM composite (interpreted as an indicator of goal coherence) and self-esteem, positive, and negative affect or vitality. Similarly, King et al. (1998), in a sample of 80 undergraduate students, found no concurrent associations between the SIM composite and life satisfaction, self-esteem, or depression. Furthermore, Michalak et al. (2004) reported that the SIM composite was unrelated to psychological symptoms in two recent studies with undergraduate participants and outpatients with anxiety and affective disorders.

Kehr (2003) reported ambiguous results regarding concurrent associations between the SIM composite and measures of positive and negative affect in a longitudinal study of 99 German managers. Participants completed the SIM at two time points about 5 months apart. At Time 1, the SIM composite (interpreted as an indicator of goal conflict) was unrelated to concurrent reports of positive and negative affect. At Time 2, the SIM composite was unrelated to concurrent reports of positive affect, but showed a significant although small positive association with concurrent negative affect (r = .21). Longitudinally, an interesting interaction emerged in the prediction of change in positive (but not negative) affect. During the course of 5 months, an increase in the SIM composite (interpreted by Kehr as emerging conflict) was associated with a decrease in positive affect, whereas stability of the SIM composite at high levels (interpreted by Kehr as enduring conflict) was associated with a slight increase in positive affect. Without speculating about the underlying mechanisms, Kehr concluded that, "goal conflicts offer the benefit of buffering against fluctuations in well-being" (p. 205).

In sum, this empirical picture is relatively inconsistent. It is clarified, however, by research using unipolar assessment methods, which yield a consistent pattern of results.

Research Using Unipolar Assessment Strategies

Palys and Little (1983) reported two studies (N_1 = 178 university students, N_2 = 72 community residents) in which participants indicated for each pair of their self-reported personal projects whether pursuing Project A facilitated, conflicted with, both facilitated and conflicted with, or was irrelevant for the pursuit of Project B (see the cross-impact matrix, described earlier). The authors restricted their reported analyses, however, to unipolar information pertaining to the extent of goal conflict only. In both studies, project conflict was among the characteristics that discriminated significantly between participants with low versus high life satisfaction. Participants with low life satisfaction reported more conflict (M = 15.03, theoretical range 0–90) among their goals than did participants who were highly satisfied with their lives (M = 11.46).

In line with this are recent findings by Pomaki et al. (2004). In a large-scale study of 3,088 health care employees, participants reported their most important work goal for the coming 12 months, and responded to four items assessing facets of conflict associated with this goal (e.g., "Pursuing this goal conflicts with other goals I find important"). This goal conflict measure was significantly associated with various facets of psychological well-being at the workplace, such as job satisfaction (r = −.24) and emotional exhaustion (r = .32). Employees were less satisfied with their jobs and more emotionally exhausted the more conflictful they perceived their most important work goals to be. These associations remained robust when controlling for a host of demographic and workplace characteristics.

Riediger and Freund (2004), in three studies with younger and older adult participants (N_1 = 111, N_2 = 145, N_3 = 81), found strong evidence for differential associations of intergoal interference and facilitation as assessed with the IRQ, described earlier, with various facets of both state and trait subjective well-being. In all three studies and independent of the participants' age, intergoal interference was associated with impairments in various facets of psychological well-being (i.e., positive psychological functioning, life satisfaction, state and trait measure of emotional well-being; $.19 \leq | r | \leq .44$), whereas intergoal facilitation did not contribute significantly to these various predictions. Only in 1 of 10 analyses did intergoal facilitation show a significant positive association with participants' diary reports of positive affect in everyday life (r = .27). There were no significant interference × facilitation interactions in any of these analyses.

In Study 3, Riediger and Freund (2004) demonstrated similar differential associations in people's day-to-day experiences. Here, participants kept nine detailed activity diaries that were distributed throughout 3 weeks. Each diary consisted of three diary entries to be completed at noon, at 6 p.m., and immediately before going to bed. In each diary entry, participants first rated their positive and negative affect during the preceding hours. They then chronologically listed all activities they had been engaged in during that time. For each reported activity, they indicated if and how much it had furthered each of a number of goals they had reported prior to the diary phase. We considered it an expression of the everyday experience of intergoal facilitation if the same activity was rated as simultaneously furthering more than one goal. Participants further indicated whether they would have liked to do or should have done something else instead of the reported activities. Affirmative responses were regarded as indicators of the everyday experience of interference between motivational tendencies. Consistent with the differential association pattern obtained in the other studies, everyday experiences of intergoal facilitation—that is, the experience that one's activities further several goals at once—were unrelated to within-person fluctuations in emotional well-being. In contrast, everyday experiences of motivational conflict—that is, the feeling that one wants to or should do something else instead of what one is doing—accounted for fluctuations of people's emotional well-being below their personal average. Experiencing motivational conflict was associated with less-than-average positive and more-than-average negative affect (about 8% modeled variance in multilevel regressions).

In short, recent evidence indicates that interference among goals is associated with impairments in subjective well-being, whereas mutual goal facilitation appears to be unrelated. This differential pattern is in line with research demonstrating that people react stronger to losses than to gains (Hobfoll, 1998; Kahneman & Tversky, 1984). Interference among goals may imply that the attainment of one's goals is threatened. Associated impairments in psychological well-being may serve the function of directing people's attention to the problem, and of motivating them to solve it (cf. Bagozzi, Baumgartner, & Pieters, 1998; Carver & Scheier, 1990).

The differential association pattern of intergoal facilitation and interference with psychological well-being offers an explanation for the inconsistency of results obtained with bipolar measures of intergoal relations. It seems likely that these are a consequence of not separating

the assessment of intergoal interference (which is negatively related to well-being) and of intergoal facilitation (which is not related to well-being).

INTERGOAL RELATIONS AND GOAL-DIRECTED BEHAVIOR

Setting personal goals is only a first step toward accomplishing them, which also requires the investment of effort and other resources into the initiation and pursuit of goal-directed actions (Freund & Baltes, 2000). Yet, motivation (i.e., setting goals) does not necessarily lead to volition (i.e., pursuing goals). Many goals remain exactly that: goals. A highly relevant research topic in motivational psychology, therefore, is the identification of factors that contribute to the initiation and maintenance of goal-directed behavior. This part of the chapter briefly reviews available research addressing the question of whether interrelations among personal goals influence people's engagement in persistent goal pursuit. I again first summarize research using bipolar assessment scales of intergoal relations, and then turn to research using a unipolar assessment strategy. As before, this review is restricted, as it only refers to studies that investigated the association between intergoal relations and goal-directed behaviors directly and explicitly.

Research Using Bipolar Assessment Strategies

Overall, research using bipolar assessment strategies found that intergoal relations tend to be related to people's engagement in goal-directed behaviors. The researchers' interpretations of these associations vary, however. For example, using an experience sampling approach, Emmons and King (1988, Study 3) randomly collected momentary thoughts and activities over a 3-week period in a sample of 40 undergraduates. At the end of the 3 weeks, participants judged whether the reported thoughts and activities were related to their previously reported goals. Participants with higher scores on the bipolar SIM (interpreted by the authors as an indicator of goal conflict) tended to act less, but to think more about their goals. The size of these associations, however, was small ($r = -.17$ and $r = .14$, respectively).

Michalak and Schulte (2002) investigated the association between intergoal relations and goal-related behavior in a clinical setting. In a sample of 24 outpatients with anxiety disorders, goal-related behaviors

were assessed with respect to the goal "get relief from symptoms." At the end of each therapy session, psychotherapists rated the participants' goal-pursuit behaviors in terms of five categories: seeking treatment, cooperation, self-disclosure (vs. refusal), willingness to test new patterns of behavior, and (lack of) resistance. Intergoal relations were assessed among the participants' goals to get relief from symptoms and their other self-reported goals using the bipolar SIM. In contrast to Emmons and King (1988), these authors interpreted the SIM composite as an indicator of coherence rather than of conflict among goals, because participants rarely rated their goals as conflictful on this scale. The study yielded marked positive associations between the bipolar SIM composite and the various goal-pursuit behaviors ($.44 \leq |r| \leq .62$). The assessed behaviors, in turn, were positively related to retrospective evaluations of therapeutic success (not, however, to pre–post changes in symptoms). The authors concluded that, "coherence ... of client's goal systems seems to facilitate motivational support of goal enactment in psychotherapy" (p. 92).

In short, research using bipolar assessment strategies showed that intergoal relations tend to be related to people's engagement in goal-directed behaviors. As a consequence of the ambiguity in interpreting bipolar scale scores, however, the researchers' interpretations of these associations vary, a problem that can be circumvented by using unipolar assessment methods. Recent research with unipolar scales suggests that it is particularly the extent of intergoal facilitation (rather than of interference) that contributes to a high involvement in behaviors directed at the pursuit of personal goals. The next section briefly summarizes the available studies.

Research Using Unipolar Assessment Strategies

McKeeman and Karoly (1991) retrospectively assessed goal conflict associated with attempts to quit smoking in a sample of college students. The sample consisted of three groups: participants who smoked at least 15 cigarettes a day and had not recently attempted to quit (smokers, $n = 38$), participants who currently smoked at least 15 cigarettes a day and had recently made an unsuccessful attempt to quit (relapsers, $n = 40$), and participants who had recently stopped smoking and who had smoked at least 15 cigarettes a day prior to quitting (self-quitters, $n = 36$). All participants reported their five most important current goals. They then rated the extent to which each goal might have interfered

with their attempt to quit smoking on unipolar response scales. Potential facilitative intergoal relations were not assessed in this study. Self-quitters retrospectively reported significantly lower conflict (M = 8.28; theoretical range = 3–27) than did both current smokers (M = 11.54) and relapsers (M = 10.75). Smokers and relapsers did not differ from each other with respect to reported goal conflict. The authors concluded that people tend to pursue the goal to quit smoking less if it interferes with their other goals. The retrospective assessment procedure, however, is a major methodological shortcoming in this study. The authors acknowledged that a "sour grapes" (i.e., excuse-making) explanation of the observed association is possible because smoking and particularly one's apparent inability to quit are commonly viewed as relatively undesirable.

One of the aims of the studies reported by Riediger and Freund (2004) was to overcome this limitation. Apart from investigating associations with subjective well-being (see earlier), we also investigated associations between intergoal interference and intergoal facilitation on the one hand and multiple (including objective) indicators of goal pursuit on the other, using cross-sectional and prospective study designs. The samples included younger and older adult participants. In all three studies, a consistent differential association pattern that was independent of the participants' age emerged. There were no interference × facilitation interactions in any of the analyses.

In Study 1, intergoal interference (as assessed with the IRQ) was not predictive of the participants' self-reported goal involvement. The higher the extent of intergoal facilitation, however, the more involved participants reported being in activities directed at the realization of their goals (r = .29).

These findings were replicated in a prospective diary study (Study 3). Here, everyday goal-directed behaviors were assessed using a diary method throughout a period of 3 weeks following the assessment of intergoal relations. As in Study 1, intergoal interference was unrelated to the participants' everyday goal involvement. Intergoal facilitation, however, was associated with an enhanced involvement in goal pursuit (r = .42).

To obtain objective (rather than self-reported) information on goal-related behaviors, we investigated exercise beginners in another study; that is, people who shared the goal to start regular physical exercise. Using the IRQ, participants evaluated how much their exercise goal interfered with, and was facilitative for, other important goals in their

lives. Objective information on the participants' involvement in goal pursuit (i.e., exercise adherence) was obtained from the participants' sports facilities throughout 5 months following the assessment of intergoal relations. In the first 3 months, exercise-specific intergoal facilitation and interference did not contribute significantly to the predictions of the participants' monthly exercise adherence. In months 4 and 5, however, a differential prediction pattern consistent with that observed in the other two studies emerged. Participants exercised more frequently the more exercise-specific intergoal facilitation they had initially reported (r = .25), whereas the degree of exercise-specific intergoal interference did not contribute to these predictions.

These results do not contradict the findings obtained with bipolar response scales. Rather, they may contribute to a clarification of the diverse interpretations proposed for these results. It seems that the observed negative association between the SIM composite and goal involvement does not reflect an inhibition of goal-directed activities by intergoal conflict (as Emmons & King, 1988, proposed), but a lack of enhancement of goal-directed activities by low levels of intergoal facilitation (as Michalak & Schulte, 2002, argued).

Consequently, theoretical approaches to the implementation of goal-directed activities would benefit from incorporating the notion of facilitative intergoal relations. So far, theoretical attempts at explaining differences in goal-related activities in terms of intergoal relations have exclusively focused on the role of conflictual relationship qualities (e.g., Maes & Gebhardt, 2000).

It seems likely that mutual facilitation among goals enhances goal-directed activities by allowing an efficient utilization of one's limited resources (e.g., time). Facilitative goals can be pursued simultaneously with little or no additional effort and without exhausting one's resources. For example, Riediger and Freund (2004, Study 3) observed a high positive association between the IRQ facilitation composite and participants' tendency to evaluate their everyday activities as simultaneously furthering two or more of their goals (r = .67). This appears to be particularly important for the long-term maintenance of goal-pursuit behaviors even in the context of new situations, demands, or interests.

Interference among goals may play a less important role in the prediction of goal-directed behaviors because it is possible (although not necessarily the case) that people mobilize efforts and other resources to compensate for interference among their goals. For example, they may extend their waking day to have more time to engage in the accomplish-

ments of their goals. Intergoal interference might thus not be reflected in fewer goal-pursuit activities (but could well have long-term health implications; Emmons & King, 1988). In situations of very severe resource limitations or when people perceive a goal not to be worth the effort, however, they might not engage in such compensatory efforts. In such situations, interference among goals may lead to a selective inhibition of goal-directed activities, very likely at the cost of the comparatively least important goals (for an empirical demonstration of selective goal pursuit associated with goal conflict in situations with clear resource limitations, see Locke, Smith, Erez, Chah, & Schaffer, 1994). Apart from the methodological problem of retrospective evaluation of goal conflict, this reasoning offers another interpretation of why McKeeman and Karoly (1991) observed that people with higher smoking-related goal conflict were less likely to be successful in attempts at quitting. To "quit smoking" may have been comparatively less important to the participants than their other goals. Consequently, they may have been more likely to disengage from attempts to quit in the interest of pursuing their other goals than to mobilize resources to realize all goals despite their interference.

In sum, the findings reviewed so far underscore that intergoal facilitation and interference are functionally distinct properties of intergoal relations. Whereas intergoal interference is associated with impairments in psychological well-being, intergoal facilitation is associated with enhanced involvement in goal-directed activities. The direction and size of these associations do not differ between younger and older adults (Riediger & Freund, 2004). There is, however, evidence that there are age-group mean differences in the nature of intergoal relations. The following section reviews this evidence.

A DEVELOPMENTAL PERSPECTIVE ON INTERGOAL RELATIONS

Current developmental theories increasingly acknowledge the importance of motivational and volitional processes for understanding human development in general, and successful aging in particular (for an overview, see Freund & Riediger, 2003). Examples are the theories of selection, optimization, and compensation (Baltes & Baltes, 1990; Freund & Baltes, 2000), of assimilative and accommodative coping (Brandtstädter & Renner, 1990), of primary and secondary control (Heckhausen & Schulz, 1995), or of socioemotional selectivity (Carstensen, 1993). One

of the common assumptions of these various theories is that people, within the limits given by social, cultural, historical, and biological constraints, actively shape their own environment and life course (Baltes, Lindenberger, & Staudinger, 1998; Brandtstädter, 1998; Lerner & Busch-Rossnagel, 1981). Setting and pursuing personal goals play an important role in this respect, particularly in adolescence and adulthood (e.g., Freund & Riediger, 2006; Lerner & Busch-Rossnagel, 1981; Nurmi, 1991; Salmela-Aro, Nurmi, Saisto, & Halmesmäki, 2000).

Life-span developmental psychologists further propose that adult development is characterized by decline and loss as well as a potential for continuing developmental gains (e.g., Baltes, 1987, 1997; Labouvie-Vief, 1981; Ryff, 1985). Empirical evidence of the fact that losses occur in later adulthood, and are particularly prevalent in very old age (i.e., 80+ years of age), is overwhelming (e.g., decreasing cognitive processing speed, increasing vulnerability to disease and disability, increasing risk of losing close social partners; for an overview see Freund & Riediger, 2003). The empirical evidence of developmental gain throughout adulthood, however, is relatively scarce. To date, it stems primarily from studies on some potential age-related gains in knowledge-associated aspects of cognitive functioning (Baltes, Staudinger, & Lindenberger, 1999; Krampe & Baltes, 2003) as well as from research in personality-associated domains of functioning, such as coping (e.g., Aldwin, 1994; Diehl, Coyle, & Labouvie-Vief, 1996; Folkman, Lazarus, Pimley, & Novacek, 1987), or emotion regulation (e.g., Carstensen & Charles, 1998; Gross et al., 1997).

In light of the increasing interest in the active role that adults of all ages play in shaping their development, it is surprising to note how little we know about age-related changes in motivational and volitional processes (for an overview, see Freund & Riediger, 2006). Only recently has research slowly begun to accumulate empirical evidence indicating that motivation and volition may be among the functional domains that show positive developmental trajectories throughout adulthood (Bauer & McAdams, 2004; Sheldon & Kasser, 2001). Among this research are a few studies showing adulthood advances in intergoal relations, which appear to have positive implications for people's persistent goal pursuit (Kehr, 2003; Locke et al., 1994; Riediger, Freund, & Baltes, 2005).

Kehr (2003) investigated German managers aged 21 to 62 years (M = 39.8). Intergoal relations were assessed with the bipolar SIM at two time points 5 months apart. Age was negatively associated with the SIM com-

posite (interpreted as an indicator of goal conflict) at the second measurement occasion ($r = -.27$). Furthermore, the older the participants, the more they tended to report progress on previously self-selected goals ($r = .23$).

Locke et al. (1994) asked 274 university professors ($M = 46.58$ years, $SD = 10.36$) to indicate the degree of conflict they felt about "the desire to be a good teacher ... and the desire to be a good researcher/scholar" (p. 83). The older the participants, the less they tended to report experiencing conflict between research and teaching. The size of this association was small, however ($r = -.14$).

My colleagues and I (Riediger et al., 2005) investigated potential behavioral functions of age-related differences in intergoal relations. Our hypothesis was that more mutually facilitative relations among personal goals in older adulthood might serve the behavioral function of ensuring high levels of goal pursuit despite decreasing external and internal resources. In developmental terms, we expected that older adults, in part through having mutually facilitative goals, stay highly involved in actively influencing their life course according to their own priorities.

We investigated this prediction with the data set described earlier. Older participants ($n = 58$, range = 60–78 years, $M = 65.2$) in a first cross-sectional study reported more mutual facilitation among their goals (as assessed with the IRQ; partial $\eta^2 = .08$) and a higher involvement in goal pursuit (partial $\eta^2 = .07$) than did younger participants ($n = 53$, range = 20–30 years, $M = 24.3$). Younger and older participants did not differ in the extent of intergoal interference. Mediational analyses revealed that the older adults' higher behavioral involvement in the pursuit of their goals was partly mediated by the higher degree of mutual facilitation among their goals.

Another short-term longitudinal study investigated 99 younger and 46 older exercise beginners. Recruiting younger and older adults who had one goal in common (i.e., the goal to start regular physical exercise) had two advantages. It increased the overlap between younger and older participants' goals, thus partially controlling for age-group differences in goal content, and it allowed prospective investigations of objective indicators of goal pursuit (exercise adherence). Interrelations between the participants' exercise goal and their other important goals were assessed with the IRQ. Consistent with the other study, older participants ($M = 64$ years) reported higher degrees of exercise-specific intergoal facilitation than did younger participants ($M = 25$ years, partial $\eta^2 = .13$). Older participants also reported less interference be-

tween exercising and their other goals (partial $\eta^2 = .04$). Furthermore, older adults maintained their exercise adherence throughout a longer period of time. In the later part of the study interval (beginning with the fourth month following the assessment of intergoal relations), older adults tended to exercise more frequently than younger adults (partial $\eta^2 = .15$). Mediational analyses again confirmed that the older adults' higher levels of exercise-specific intergoal facilitation partly mediated this age-group difference in pursuing the exercise goal.

This finding was replicated in a diary phase with a subsample of participants ($n = 52$ younger, $n = 29$ older adults). In-depth activity diaries throughout a period of 9 days indicated that older adults tend to be more involved in the everyday pursuit of their goals than younger adults (partial $\eta^2 = .22$). Control analyses revealed that this age-group difference could not be accounted for by the fact that older adults typically have available more free time and are less involved in study or work activities than younger adults. Again, this higher goal-pursuit involvement of the older adults was partially mediated by the higher extent of intergoal facilitation in that age group.

In effect, this provides the first empirical evidence to suggest that establishing a system of mutually facilitative personal goals is among the competencies that show positive adult developmental trajectories, at least into "young" old adulthood (i.e., up to about 80 years of age; Baltes, 1997; Baltes & Smith, 2003). This finding is in line with the general argument that higher levels of structural integration of different aspects of life and personality characterize developmental growth in adulthood (e.g., Erikson, 1959; Jung, 1933; Werner, 1967). These results further indicate that having more mutually facilitative goals serves an important developmental-regulatory function in older adulthood, namely, the maintenance of very high levels of active involvement in life management (goal pursuit) despite age-associated declines in available resources.

SUMMARY

The empirical evidence reviewed in this chapter shows that a person's goals are not necessarily independent of each other. They may influence each other in positive (facilitative) and negative (interfering) ways. Although it may seem intuitively appealing to assume that facilitation and interference among goals are mutually exclusive opposites on one dimension, they appear to be more adequately conceptualized as distinct

characteristics. Goals may interfere with one another in some aspects, and mutually facilitate each other in other aspects.

This chapter reviewed empirical evidence on three central issues in research on intergoal relations: (a) associations with psychological well-being, (b) associations with persistent goal pursuit, and (c) implications of adult developmental changes in intergoal relations on goal involvement in a social ecology of increasingly limited resources.

In sum, the reviewed studies show that the nature of interrelations among a person's goals is associated with his or her experiences and behaviors. Recent findings emphasize that it is particularly the extent of intergoal interference (rather than facilitation) that is associated with impairments in subjective well-being. Conversely, it is particularly the extent of intergoal facilitation (rather than interference) that is associated with an enhanced behavioral involvement in goal pursuit. Age-comparative research demonstrates that these associations hold in younger and older adults. There are, however, age-associated differences in the nature of interrelations among younger and older adults' goals. Older adults tend to report more mutually facilitative goals than younger adults. This, in turn, appears to ensure high levels of engagement in goal pursuit in older adulthood (or, in developmental terms, of active involvement in shaping one's life and environment according to one's own priorities), even despite age-associated declines in external and internal resources. These findings contribute to a recently evolving line of research suggesting that motivational and volitional processes are among the domains of functioning that have the potential for positive developmental trajectories in adulthood.

Outlook

The understanding of motivational and developmental mechanisms relevant to this field of research would considerably benefit from future research that refines and integrates the various findings reviewed in this chapter. I consider four approaches to be particularly fruitful in this respect.

First, the field would be advanced by studies that focus on potential moderators of the extent, development, and functions of intergoal relations (e.g., gender, goal characteristics).

Second, another promising route for expanding our knowledge would be to investigate potential mediators; that is, to identify the mechanisms underlying the findings reviewed in this chapter. Relevant research ques-

tions pertain, for example, to the psychological processes underlying the associations between intergoal interference and psychological well-being, and between intergoal facilitation and persistent goal pursuit. Another important line of fruitful future investigation involves the identification of life circumstances or strategies that contribute to systems of more mutually facilitative goals in older as compared to younger adulthood.

Third, equally important is the investigation of the intraindividual development of goal selection and pursuit competencies (Baltes, Reese, & Nesselroade, 1977; Nesselroade & Baltes, 1979). So far, the available evidence on age-related differences in intergoal relations is cross-sectional. It thus potentially confounds age and cohort effects. Longitudinal research would yield a more precise picture of within-person developments (for one of the first attempts in this direction, see Kehr, 2003).

Fourth, future research might further differentiate the currently available empirical picture by providing more adequate insights into potential causal sequences with the help of experimental and longitudinal study designs. It is possible, for example, that associations between intergoal facilitation and subjective well-being evolve over time. The higher involvement in behaviors directed at the pursuit of mutually more facilitative goals could ultimately result in comparably more successful realization of these goals (King et al., 1998), which over time could result in higher levels of satisfaction and well-being (Brunstein, 1993). Longitudinal research might also lead to the identification of potential positive aspects of intergoal interference. It has been repeatedly argued that the acknowledgment, confrontation, and eventual solution of intraindividual conflict might play an important role in stimulating developmental growth (e.g., Brim & Kagan, 1980; Riegel, 1975; Turiel, 1974). Empirical evidence on this proposed positive role of conflict in developmental regulation is rare. The study of ontogenetic change in intergoal interference and its solution might be a suitable way to investigate this question. Impairments in psychological well-being associated with intergoal interference might initiate attempts to resolve the interference, and thus, in the long run, promote the attainment of more integrated goal systems.

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