Running head: INTERGOAL RELATIONS IN THE CONTEXT OF …

Intergoal Relations in the Context of Starting to Exercise: A Case of Positive Development from Younger to Older Adulthood

Michaela Riediger and Alexandra M. Freund

Michaela Riediger

Center for Lifespan Psychology

Max Planck Institute for Human Development, Berlin

Lentzeallee 94

D - 14195 Berlin

Germany

riediger@mpib-berlin.mpg.de

Alexandra M. Freund

University of Zurich

Dept. of Psychology

Binzmühlestrasse 14 / 11

CH-8050 Zürich

Switzerland

freund@psychologie.uzh.ch

Intergoal Relations in the Context of Starting to Exercise: A Case of Positive Development from Younger to Older Adulthood

A well-known proverb posits that old dogs do not learn new tricks. Integrating a new, effortful behavior in their daily routine, then, is not what we expect older adults to be particularly good at. In this article, we summarize evidence that, in contrast to this expectation, older people might even be better than younger adults in taking up the habit to exercise regularly. Exercising is one of the areas in life where beliefs, intentions, and behaviors often do not match. Many believe that regular exercise would be good for their health and might intend to follow their belief, but maintaining a regular exercise regimen is a quite different matter. In fact, the empirical association between exercise-related intentions and actual behavior is rather weak (Fuchs, 1997; Hagger, Chatzisarantis, & Biddle, 2002). In this article, we demonstrate that age is a possible moderator of this relationship. We posit that older people are more likely to harmoniously match regular exercise with their other goals, and that this, in turn, contributes to longer-term exercise adherence.

The Role of Goals for Development and Health-Behavior Change

Current lifespan developmental theories acknowledge that setting and pursuing goals plays an important role in shaping one's development (e.g., Freund & Baltes, 2000). Not much, however, is known about age-related changes in goal processes (for overviews, see Freund & Riediger, 2006; Heckhausen, 1999). The little evidence that is available suggests that setting and pursuing goals may be among the domains that show positive developmental trajectories throughout adulthood rather than age-related decline (Bauer & McAdams, 2004; Sheldon & Kasser, 2001).

Engagement in health-relevant behaviors is an example where the developmental-regulatory role of the individual is particularly evident. In this article, we focus on the health-promoting behavior of starting regular physical exercise. Being physically active reduces the risk for developing cardiovascular and other diseases in all phases of the life span.

Furthermore, in older adulthood, regular exercise along with other lifestyle habits, such as balanced nutrition, or social and intellectual involvement, can, at least temporarily, postpone or attenuate physiological decrements associated with aging (Fries, 1990; Rowe & Kahn, 1987). In stark contrast to the beneficial effects of exercising, physical inactivity is highly prevalent in Western societies. Interestingly, awareness of advantages of physical activity appears comparatively developed. In fact, numerous sedentary individuals form, at some point in time, the intention to start regular exercise. Many exercise beginners, however, quit after a few weeks or months (Wagner, 1999).

Parallel to the recent emphasis on the regulatory functions of goals in developmental psychology, health psychologists increasingly acknowledge the importance of goals for the adoption and maintenance of health behaviors (Karoly, 1990; Maes & Gebhardt, 2000; Schwarzer, 1999). Linkages between developmental and health psychology, however, are relatively rarely drawn (but see Ziegelmann, Lippke, & Schwarzer, 2006). In our research (Riediger & Freund, 2004, 2006; Riediger, Freund, & Baltes, 2005), we propose that adulthood advances in setting and pursuing goals may benefit older adults in realizing intended lifestyle change, such as starting to exercise regularly, and that the nature of relations between exercising and the individual's other goals play an important role in this respect.

Integrating the Goal of Exercising into the Individual's Goal System

People typically hold several goals at once. An exercise beginner's goal to start regular physical exercise is but one of them. Such multiple goals are often related to one another (e.g., Emmons & King, 1988; Little, 1983). Intergoal *facilitation* occurs when the pursuit of one goal (e.g., exercise regularly) simultaneously increases the likelihood of success in reaching another goal (e.g., lose weight). *Interference* among goals, in contrast, occurs when the pursuit of one goal (e.g., promotion at work) impairs the likelihood of success in reaching another goal (e.g., exercise regularly).

Most of the currently available research on intergoal relations was guided by an interest in potential consequences of *interference* among goals. Intergoal facilitation has received comparatively less attention. One example is the health behavior goal model (Gebhardt, 1997; Maes & Gebhardt, 2000), which conceptualizes conflict of a target health behavior (e.g., physical activity) with the person's other goals as a determinant in the process of health-behavior change. Two studies investigating physical activity (Gebhardt & Maes, 1998) and smoking cessation (McKeeman & Karoly, 1991) support the assumption that people are less successful in realizing a health behavior if it conflicts with their other goals. The study by Gebhardt and Maes, however, included only an indirect measure of goal conflict and relied exclusively on self-report. The study by McKeeman and Karoly used a more direct goal conflict measure, but applied this instrument retrospectively.

Focusing on the adoption of regular physical exercise, one of our own studies expanded this line of research by employing a developmental perspective. With the aim to implement a number of methodological improvements, we obtained *objective* information on the participants' exercise behavior, directly assessed exercise-specific intergoal conflict *and* facilitation, and employed a *prospective* design to investigate potential implications of exercise-specific intergoal relations for the longer-term maintenance of regular exercise in *younger* ($N = 99$, $M = 25.1$ years) and *older* ($N = 46$, $M = 63.8$ years) exercise beginners. It is important to note that we investigated a sample of people who had mastered an important step in the process of health-behavior change, namely, formed the intention to exercise regularly. We were interested in whether realizing an intended change in life style is influenced by the extent of facilitation and interference between exercising and the individual's other goals, and in whether exercise-specific intergoal relations play a role in explaining age-related differences in longer-term exercise adherence.

We asked participants to report three important goals they had besides exercising. The extent to which the exercise goal interfered with, and facilitated the three other important

goals was assessed with the Intergoal Relations Questionnaire (IRQ, Riediger & Freund, 2004). The IRQ assesses intergoal relations for pairwise constellations of goals. Interference among goals is assessed in terms of time constraints, energy constraints, financial constraints, and in terms of incompatible goal attainment strategies. Mutual facilitation among goals is assessed in terms of instrumental goal relations, and in terms of overlap of goal attainment strategies. The IRQ has demonstrated good psychometric properties and a stable structure of two unrelated factors (interference and facilitation) in several independent samples of adults of various ages (Riediger, 2007; Riediger & Freund, 2004; Riediger et al., 2005). In the research reported here, we derived indicators of exercise-specific intergoal facilitation and interference by aggregating IRQ items involving comparisons of the exercise goal with the other three goals. We also obtained, for each of the five months following the assessment of intergoal relations, objective information on the participants' exercise frequency from attendance lists and electronic attendance registration data kept by the participants' exercise facilities.

Intergoal Relations as Predictors of Longer-Term Exercise Adherence

In the first three months of the study interval, exercise-specific facilitation and interference were unrelated to the participants' exercise adherence. In months 4 and 5, however, exercise-specific intergoal facilitation, but not interference, contributed significantly to the prediction of the participants' exercise frequency. Participants exercised more frequently the more exercise-specific facilitation they had initially reported (month 4: multiple $R = .31$; month 5: multiple $R = .28$). Furthermore, participants who continually exercised at least once a week throughout the five months of the study interval (54.2% of the sample) reported a higher level of initial exercise-specific intergoal facilitation than participants who had not exercised at all in the last two months of the study interval (16.9% of the sample; partial $\eta^2 = .06$). This pattern of results was the same for younger and older participants.

A characteristic of our study was the large exercise-specific heterogeneity of the sample. Recruited in 28 different sports facilities, participants were heterogeneous with respect to exercise contexts, kinds of sport, and previous exercise experience. 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 age-group differences in, exercise-specific characteristics. To control for these, detailed information was obtained on the participant's reasons to exercise, exercise-specific self-efficacy, intention strength, exercise enjoyment, exercise context, and exercise biography. The predictive value of exercise-specific intergoal facilitation for longer-term exercise adherence was robust to controlling for these characteristics.

Although being correlational, the investigation has a number of methodological characteristics that make assuming a causal relationship between intergoal facilitation and longer-term exercise adherence quite plausible: At the beginning of the study, all participants shared the goal of starting regular physical exercise. In the course of the study interval, differences in exercise behaviors evolved. Exercise-specific intergoal facilitation, assessed at the first measurement point, was predictive of these behavior variations occurring later in time. Perceiving exercising as facilitating one's other goals (and vice versa) thus appears to be among the antecedents to longer-term exercise maintenance.

We have replicated this pattern of findings with respect to goals in life domains other than starting to exercise. In various samples, we have found mutual facilitation among goals to be a reliable predictor of high involvement in longer-term goal pursuit, and interference among goals, albeit not predictive of involvement in goal pursuit, to be a reliable predictor of impairments in subjective well-being (Riediger, 2007; Riediger & Freund, 2004, 2006).

Age-Group Differences in Intergoal Relations and Exercise Adherence

Older participants in our exercise study were more persistent in maintaining their desired change in life style than were younger adults. Beginning with the fourth month

following the assessment of intergoal relations, older adults tended to exercise more frequently than younger adults (partial η^2 = .15). Furthermore, older as compared to younger adults were significantly more likely to have exercised at least once a week throughout the entire study interval (71.1% versus 46.4%, respectively), 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 months of the study interval; 4.4% versus 22.7%, respectively).

A particularly interesting question is what role the nature of intergoal relations played in this respect. In fact, older participants reported a higher degree of exercise-specific intergoal facilitation (partial η^2 = .13) than did younger participants, and mediational analyses revealed that this partly mediated their higher exercise adherence (Riediger et al., 2005). Again, these findings were robust to controlling for age-group differences in exercise-specific rival predictors, such as participant's reasons to exercise, exercise context, exercise biography and so forth.

In other words, older as compared to younger adults were more persistent in realizing their goal to start regular physical exercise, in part, because exercising was more facilitative to their other important goals (and vice versa). A possible interpretation is that mutual facilitation among goals enhances goal-directed activities by allowing an efficient utilization of one's (limited) resources in the interest of one's goals. Facilitative goals can be pursued simultaneously with little or no additional effort (see Riediger & Freund, 2004).

We have replicated this pattern of findings in goal contexts other than starting to exercise. Interestingly, the analysis of comprehensive activity diaries in one study showed that these age-group differences could not be attributed to the fact that older adults have available more time for leisure activities and are less involved in work or study than younger adults (Riediger et al., 2005). Age-related increases in motivational selectivity, however, appear to play a decisive role in this respect. In one of our studies we found that, beginning in the transition from middle to later adulthood, adults selected *fewer* goals that were more highly

related to *central* life domains and that were more *similar* in contents. Moreover, focusing (in terms of selecting central and similar goals), but not restricting (the number of goals), contributed to higher facilitation among goals, which, in turn, lead to stronger engagement in goal pursuit (Riediger & Freund, 2006).

Although we have not investigated this in our sample of exercise beginners, these findings suggest that motivational selectivity in terms of focusing may be among the factors underlying the more persistent exercise adherence in older adults, by resulting in the tendency for these goals, including starting to exercise, to be mutually facilitative, which, in turn, contributes to a high involvement in goal pursuit.

Conclusions

It seems that old dogs can learn new tricks after all. Our findings suggests that older adults have more mutually facilitative goals than younger adults and, to some degree as a consequence of this, might actually be better in establishing an intended change in life style such as beginning and maintaining regular exercise.

Our research thus emphasizes the importance of personal goals and their interrelations for longer-term adherence to health-behavior change. The health behavior goal model (Gebhardt, 1997; Maes & Gebhardt, 2000) emphasizes the significance of *conflict* between a health behavior and the person's other goals as a determinant in health-behavior change. Considering *positive* (i.e., facilitative) intergoal relations as well, we found that facilitation is even more important than goal conflict in determining longer-term exercise adherence. This suggests that theoretical models of health behavior change would benefit from incorporating the notion of facilitative intergoal relations. Considering and strengthening facilitative relations between a target health behavior and other important goals might represent a pathway to understanding, and eventually supporting, the longer-term maintenance of health behaviors, at least after the decision to engage in such behaviors has been made.

From a developmental perspective, the study demonstrates that mutual facilitation between exercising and the individual's other goals increases throughout adulthood, at least into the transition form middle-aged to "young" old adulthood. Furthermore, our research shows that having mutually facilitative goals serves an important developmental-regulatory function in older adulthood, namely, the maintenance of high levels of active involvement in goal pursuit despite age-associated declines in available resources. This research thus complements the evolving line of studies showing that goals may be among the phenomena that show positive adult trajectories (Bauer & McAdams, 2004; Sheldon & Kasser, 2001).

A promising research field for further investigation is to extend the search for antecedents to intergoal facilitation, such as motivational selectivity, into the domain of health-behavior change. The identification of determinants of mutual facilitation between a health behavior and other important goals of the individual 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 in which the young can learn from the older, and in which knowledge on the role that intergoal relations play in developmental regulation can be applied.

References

Bauer, J. J., & McAdams, D. P. (2004). Growth goals, maturity, and well-being. *Developmental Psychology, 40*, 114-127.

Emmons, R. A., & King, L. A. (1988). Conflict among personal strivings: Immediate and long-term implications for psychological and physical well-being. *Journal of Personality and Social Psychology, 54*, 1040-1048.

Freund, A. M., & Baltes, P. B. (2000). The orchestration of selection, optimization and compensation: An action-theoretical conceptualization of a theory of developmental regulation. In W. J. Perrig & A. Grob (Eds.), *Control of human behavior, mental processes, and consciousness: Essays in honor of the 60th birthday of August Flammer* (pp. 35-58). Mahwah, NJ: Lawrence Erlbaum.

Freund, A. M., & Riediger, M. (2006). Goals as building blocks of personality and development in adulthood. In D. K. Mroszek & T. D. Little (Eds.), *Handbook of personality development* (pp. 353-372). Mahwah, NJ: Lawrence Erlbaum.

Fries, J. F. (1990). Medical perspectives upon successful aging. In P. B. Baltes & M. M. Baltes (Eds.), *Successful aging. Perspectives from the behavioral sciences* (pp. 35-49). Cambridge: Cambridge University Press.

Fuchs, R. (1997). *Psychologie und körperliche Bewegung [Psychology and physical activity]*. Göttingen, Germany: Hogrefe.

Gebhardt, W. A. (1997). *Health behavior goal model. Towards a theoretical framework for health behavior change*. Leiden, Netherlands: Leiden University.

Gebhardt, W. A., & Maes, S. (1998). Competing personal goals and exercise behaviour. *Perceptual and Motor Skills, 86*, 755-759.

Hagger, M. S., Chatzisarantis, N. L. D., & Biddle, S. J. H. (2002). A meta-analytic review of the theories of reasoned action and planned behavior in physical activity: Predictive

validity and the contribution of additional variables. *Journal of Sport & Exercise Psychology, 24*, 3-32.

Heckhausen, J. (1999). *Developmental regulation in adulthood: Age-normative and sociostructural constraints as adaptive challenges*. New York: Cambridge University Press.

Karoly, P. (1990). Goal systems and health outcomes across the life span: A proposal. In H. E. Schroeder (Ed.), *New directions in health psychology assessment* (pp. 65-93). New York: Hemisphere.

Little, B. R. (1983). Personal projects: A rationale and method for investigation. *Environment and Behavior, 15*, 273-309.

Maes, S., & Gebhardt, W. (2000). Self-regulation and health behavior: The health behavior goal model. In M. Boekaerts, P. R. Pintrich & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 343-368). San Diego, CA: Academic Press.

McKeeman, D., & Karoly, P. (1991). Interpersonal and intrapsychic goal-related conflict reported by cigarette smokers, unaided quitters, and relapsers. *Addictive Behaviors, 16*, 543-548.

Riediger, M. (2007). Interference and facilitation among personal goals: Age-group differences and associations with well-being and behavior. In B. R. Little, K. Salmela-Aro, J.-E. Nurmi & S. D. Philipps (Eds.), *Personal project pursuit: Goals, action, and human flourishing* (pp. 119-143). Mahwah, NJ: Lawrence Erlbaum.

Riediger, M., & Freund, A. M. (2004). Interference and facilitation among personal goals: Differential associations with subjective well-being and persistent goal pursuit. *Personality and Social Psychology Bulletin, 30*, 1511-1523.

Riediger, M., & Freund, A. M. (2006). Focusing and restricting: Two aspects of motivational selectivity in adulthood. *Psychology and Aging, 21*, 173-185.

Riediger, M., Freund, A. M., & Baltes, P. B. (2005). Managing life through personal goals: Intergoal facilitation and intensity of goal pursuit in younger and older adulthood. *Journal of Gerontology: Psychological Sciences, 60B*, P84-P91.

Rowe, J. W., & Kahn, R. L. (1987). Human aging: Usual and Successful. *Science, 237*, 143-149.

Schwarzer, R. (1999). Self-regulatory processes in the adoption and maintenance of health behaviors. *Journal of Health Psychology, 4*, 115-127.

Sheldon, K. M., & Kasser, T. (2001). Getting older, getting better? Personal strivings and psychological maturity across the life span. *Developmental Psychology, 37*, 491-501.

Wagner, P. (1999). *Aussteigen oder Dabeibleiben? Determinanten der Aufrechterhaltung sportlicher Aktivität von Erwachsenen in gesundheitsorientierten Sportprogrammen [Drop out or stick to it? Determinants of adults' adherence to physical activity in health-oriented exercise programs]*. Leipzig, Germany: Wissenschaftliche Buchgesellschaft/KNO.

Ziegelmann, J. P., Lippke, S., & Schwarzer, R. (2006). Adoption and maintenance of physical activity: Planning interventions in young, middle-aged, and older adults. *Psychology and Health, 21*, 145-163.

Author Note

Michaela Riediger and Alexandra M. Freund, Max Planck Institute for Human Development, Berlin, Germany.

Alexandra M. Freund is now at the University of Zurich, Switzerland.

Correspondence concerning this article can be addressed to Michaela Riediger, Center for Lifespan Psychology, Max Planck Institute for Human Development, Lentzeallee 94, 14195 Berlin, Germany, email: riediger@mpib-berlin.mpg.de