

# Effects of an Intervention Promoting Proactive Coping Competencies in Middle and Late Adulthood

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**Purpose:** We tested the effectiveness of a brief educational program that is based on proactive coping theory. The program entails a four-session group intervention for people aged between 50 and 75 years and was intended to improve proactive coping competencies. Furthermore, we investigated the positive as well as negative side effects and differential effectiveness of the program. **Design and Methods:** A total of 158 middle aged and older men and women participated in the study. In a prospective randomized control trial with an experimental group and a waiting control group, we collected questionnaire data at three points (baseline, after completion of the program, and 3 months postintervention). **Results:** The program improved proactive coping competencies significantly. Three months after completion of the intervention, these results remained stable. Nearly all effect sizes in the experimental group were medium or higher. The program did not have negative side effects in terms of worrying or negative mood, and it did not change levels of self-efficacy. Demographic characteristics of participants did not predict changes in proactive competencies. Differential effectiveness could only be shown for a few psychological characteristics: Lower levels of well-being, higher levels of proactive orientation, and lower levels in the consideration of future consequences of one's own behavior predicted an increase in proactive coping competencies. Participants who formulated

personal goals in concrete terms also profited more from the intervention. **Implications:** Conceptualizing proactive coping as a set of competencies allows the translation of this approach into interventions. Competencies that facilitate future-oriented self-regulation can be improved by a brief educational program in middle and late adulthood.

*Key Words:* Proactive coping, Future self-regulation, Successful aging, Intervention, RCT design, Middle and late adulthood

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In contrast to negative aging stereotypes, future investment is rewarding in later life (Baumeister, 1991; Lachman & Prenda Firth, 2004; Lapierre, Bouffard, Dubé, Labelle, & Bastin, 2001; Reker & Wong, 1988). Positive aspirations are related to well-being, and life satisfaction and personal goals are among the phenomena that show positive development throughout adulthood (Riediger, Freund, & Baltes, 2005). Moreover, longitudinal analyses show the predictive value of future investments over long periods: A study by Holahan and Chapman (2002) found that purposiveness in midlife was highly correlated with proactive goals in old age.

Despite these findings, there are few educational programs with proven effectiveness that stimulate investment in the future in the third and fourth age. Future investment is approached as behavior that not only focuses on the present life situation but also on the future. Future investment describes behavior that tries to reach positive outcomes and avoid pitfalls. Implemented educational programs for older adults concentrate on specific types of problems that already exist, such as reducing loneliness (Stevens, Martina, & Westerhof, 2006) or depression (Cuijpers, 1998), or coping with a chronic condition (Lorig et al., 1999). These programs operate in a reactive perspective, because they intend to minimize experienced (age-related) losses. In order to stress the

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potentials of the second half of life, the shift to proactive coping appears useful and the development of related educational programs promising.

We conceptualize proactive coping as the promotion of desired future outcomes *and* the prevention of undesired changes (Bode, De Ridder, & Bensing, 2006). In this perspective, the participant defines the meaning of desired and undesired changes. The combination of preventing (threatening) losses and striving for improvement can provide a useful framework for promoting successful aging through a deceleration of the unfavorable proportion of losses and gains in later phases of the life span (Baltes, 1997). It is our contention that proactive coping can promote successful aging by stimulating people to invest in their future, focusing on personal growth and the optimization of life in middle and late adulthood.

Until now, proactive coping has been studied as risk management (i.e., preventing losses; Aspinwall & Taylor, 1997) or as goal management (i.e., striving for life improvement; Greenglass, 2003; Schwarzer & Knoll, 2003). In our view, it is the combination of risk management and goal management that makes proactive coping a particularly promising concept with regard to aging. It recognizes possible losses in the process of aging but it simultaneously emphasizes positive development in late life by improving self-regulating capacities. On the basis of this assumption, we developed a brief educational intervention using a group format. The program, titled "In Anticipation of the Golden Years," trains people aged 50 to 75 years in proactive coping competencies and supports them in developing more future-oriented behavior.

In contrast to studies that use proactive coping as a stable disposition (Seibert, Crant, & Kraimer, 1999) or as a mediator construct (Greenglass, 2003), we follow the process model of proactive coping as a set of skills as conceptualized by Aspinwall and Taylor (1997). These authors highlight the potential value of conceptualizing coping as a set of competencies and not just as relatively stable behavioral preferences. Training competencies should be a promising way to improve proactive coping. The process model describes five interrelated tasks of proactive self-regulation: resource accumulation, attention recognition, initial appraisal, preliminary coping, and the use of feedback. The program follows this process model; at the sessions, each topic has been translated into group tasks and individual trajectories, which are as follows: (a) importance of prevention and preparation, (b) identifying and coping with early warning signals, (c) positive future goals and adequate strategies, and (d) use of feedback (see Bode et al., 2006). Our approach differs from existing educational interventions for older adults that are either reactive in their approaches or focus on specific types of problems that the individuals may already experience (Bode et al., 2006;

Steverink, Lindenberg, & Slaets, 2005). From an intervention perspective, the proactive and future-oriented approach *in combination* with self-management techniques is the specific contribution of this new program.

In this article, we address two main issues: whether the program was effective, and whether there are differential program effects with regard to psychological and demographical characteristics of participants and intervention-related characteristics. The criterion for program effectiveness is improvement in proactive coping competencies. We expect these competencies to improve in the experimental group and remain stable at the follow-up measurement, and we expect to observe no changes in the control group.

In addition to the effectiveness of the program, we also investigated the possible positive and negative side effects of participation. With regard to positive side effects, we assumed that, as participants underwent various learning processes, worked through the tasks in the proactive coping model, and experienced behavioral confirmation, their general self-efficacy beliefs (Bandura, 1977) would improve. With regard to negative side effects, the program stimulates older adults to think about the future and their future behaviors by working with anticipated regret (Abraham & Sheeran, 2004). This technique is used in order to stimulate issues high on personal motivation, but it poses the danger of creating threats concerning the future. We assume, however, that a positive reformulation of threats will prevent an increase in worrying and negative mood.

The second research question concerns differential effectiveness of the program, because these results can inform us about the most promising groups for inclusion in subsequent replications of the program. We examined three clusters of possible predictors for the intervention's success: participants' psychological characteristics, demographical characteristics, and intervention-specific attributes. In the first cluster, we examined proactive orientation, preferences in the consideration of future consequences, and subjective well-being. We expected these psychological characteristics to be associated with improvement in proactive competencies, because they outline resources for future-oriented self-regulation. The tendency to worry, however, is expected to compromise the acquisition of proactive skills because people with high levels of worrying might have less emotional and attentional resources to invest in future self-regulation.

Demographic characteristics of participants formed the second predictive cluster. Studies by Ouwehand (2005) suggest that people with more resources should find it easier to acquire proactive competencies than those with fewer resources. Higher levels of education, good health status, and the absence of physical limitations reflect a higher level of resources. We also explored age, gender,

marital status, and current occupational situation as predictor variables, because they represent status on central domains of life that might facilitate or hinder the acquisition of competencies.

The final cluster of predictors consists of intervention-specific variables that might influence the effectiveness of the program by facilitating the development of relevant competencies. These include the older adults' participation rate, the perceived importance of their individual goals, their success in formulating the goal in concrete and achievable terms, and finally whether they achieved their goal.

## Methods

### *Recruitment and Procedure*

The program was delivered by two local health service institutes in the Netherlands (Utrecht and Oss) that offer interventions related to well-being and health. Participation was free of charge. We had information about the program and the research project distributed by a press report that was taken up by regional and national media. We also announced the program in leaflets containing self-screening questions, which we placed in locations frequently used by the target population (details in Bode & de Ridder, in press). People between 50 and 75 years of age who were concerned about their future were invited to participate. There were no exclusion criteria. The broad age range of 50 to 75 years of age resulted from our assumption that future-related behavior in the context of preparing for aging is beneficial beyond retirement age. We randomly assigned those individuals who signed up to the experimental condition or the waiting control condition, and we informed them about the procedure. The waiting control group received the intervention after the follow up test. Both groups received questionnaires before the start of the program (T0), after finishing the program (T1), and 3 months after the post-test (follow up, T2). We sent all questionnaires by mail, and we included self-addressed envelopes for participants to return the completed questionnaires. Participants, trainers, and researchers were not blinded to group assignment.

### *Program Description*

The program consisted of four 2-hour sessions with 8 to 10 participants. Trainers with professional backgrounds as nurses, occupational therapists, and psychologists used a standard protocol (Bode & de Ridder, 2004); we selected them on the basis of their age (50+) and experience with teaching. They were intensively trained for 20 hours on an individual basis.

In the first session, trainers helped participants to identify the advantages of preparing oneself for the

future. In the homework assignment, participants were asked to write down signals warning them that things in their life were going in the wrong direction. The assignment required them to anticipate topics about which they would have regrets in 5 years if they did not work on them now (Abraham & Sheeran, 2004).

In the second session, trainers discussed with participants the recognition and handling of early warning signals in the process of aging, and they helped them to identify proactive ways of coping with warning signals. Furthermore, participants selected one personal future goal from the homework on anticipated regret. Participants worked on this goal during the following 2 weeks (the individual trajectory).

In the third meeting, trainers helped participants specify strategies to reach their personal goal by the use of the technique of mental simulation. According to Taylor, Pham, Rivkin, and Armor (1998), mental simulation involving the initiation and maintenance of problem-solving activities produces progress in achieving those goals. In our program, the technique of mental simulation served as a means of virtually practicing skills that facilitate proactive activities. Using a structured protocol induced by the trainer, the participants imagined two alternative ways for attaining the desired state. After the mental simulation, everyone decided which action he or she would try out in reality to achieve the personal goal.

In the last session, participants evaluated the attempts to reach the individual goal. In addition, the trainers discussed the productive use of feedback, because of the importance this feedback has in the process model of proactive coping. Participants examined the increase in knowledge about their own potential, the supportive or hindering function of their environment, and the attainability of their goals and plans. The program ended with a general evaluation.

The attendance rate was very good: 62 (73%) of participants attended all four meetings, 20 (24%) participated three times, and only 2 individuals missed two sessions.

### *Participants*

In Figure 1 the flow of participants through each stage of the study is described. Before baseline measurement, we allocated a total of 178 individuals to the experimental or control group by way of consecutive admission. Between randomization and baseline measurement, 20 participants dropped out. The primary reasons given were that they felt too young and did not want to participate in research after all. During the study, the experimental group was reduced from 84 at T0 to 71 at T2, mainly because of health- and work-related reasons. The control group began with 74 persons; at T2, 60 participants returned the third questionnaire. The main reason for dropout was refusal to

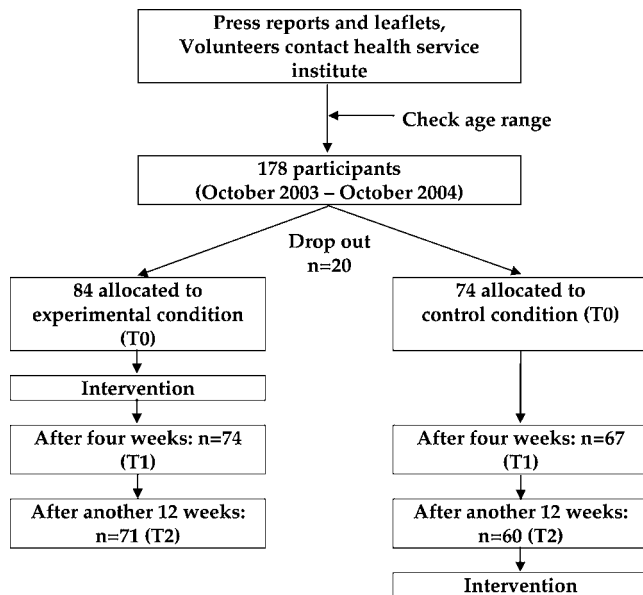


Figure 1. Flow diagram of participants through each stage of the trial.

continue research participation. Our analyses of participants who dropped out revealed that dropout was independent of assignment to experimental or control group,  $\chi^2(158,1) = 0.33$ ;  $p = .56$ , and individuals who dropped out did not differ on demographic characteristics from those who returned all three questionnaires [gender,  $\chi^2(158,1) = 0.25$ ,  $p = .616$ ; marital status,  $\chi^2(155,4) = 4.29$ ,  $p = .37$ ; employment status,  $\chi^2(156,2) = 0.16$ ,  $p = .92$ ; age,  $F(158,1) = 0.45$ ,  $p = .50$ ; subjective health,  $F(155,1) = 1.85$ ,  $p = .18$ ], except for their educational status. Participants with 10 to 13 years of education dropped out more often than people with 14 or more years of education [ $\chi^2(156,3) = 8.5$ ,  $p = .04$ ].

The characteristics of the participants at baseline are shown in Table 1. Experimental and control groups were equal on most of the demographic characteristics except for household composition, education, and subjective health. Participants in the experimental group lived alone significantly more often, completed fewer years of education, and evaluated their health situation less positively than did participants in the control group.

## Measures

### Outcome Measures

Because we did not have a measure for proactive coping competencies, we designed the Proactive Competence Scale (PCS), which is based on the five phases of proactive coping (Aspinwall & Taylor, 1997). On 22 items, participants report whether they have the relevant abilities, using a scale ranging from 1 (not at all able) to 4 (very able; see Table 2). The

Table 1. Characteristics of Participants in the Experimental and Control Conditions

Characteristic	Experimental Group	Control Group
Age (years)	61.57 (5.71)	61.24 (5.26)
Gender (%)		
Female	70.2	63.5
Marital status (%)		
Never married	15.7	4.2
Married or partner	60.2	66.7
Divorced	13.3	18.1
Widow(er)	10.8	9.7
Employment (%)		
Employed	32.1	26.4
Retirement	36.9	44.4
Other	31.0	29.2
Household comp. (%) <sup>*</sup>		
Living alone	41.7	22.2
Living with 1+ Individuals	58.3	77.8
Education (%) <sup>*</sup>		
>13 years	29.8 <sup>*</sup>	47.2 <sup>*</sup>
11–13 years	33.3	26.4
7–10 years	29.8	26.4
<7 years	7.1 <sup>*</sup>	0 <sup>*</sup>
Subjective health <sup>a,*</sup>	2.40 (0.58)	2.17 (0.61)
Physical limitations <sup>b</sup>	1.57 (0.54)	1.43 (0.57)
Fitness and energy <sup>c</sup>	1.71 (0.57)	1.57 (0.67)

Notes: For the experimental group,  $n = 84$ ; for the control group,  $n = 74$ .

<sup>a</sup>Measured on a 5-point scale (1 = very good to 5 = very bad).

<sup>b</sup>Measured on a 3-point scale (1 = not at all to 3 = many).

<sup>c</sup>Measured on a 3-point scale (1 = yes, 2 = moderate, and 3 = no).

<sup>\*</sup> $p < .05$ ; analyses of variance for age, subjective health, physical limitations, and energy; chi-square tests for all other variables.

first exploration of the 22 items revealed a six-factor solution in which the content of the fifth and the sixth factors was very similar to that of the third and fourth factors. In order to get a more parsimonious solution, we executed a principle component analysis with varimax rotation for four fixed factors; 21 items made up the four factors. As shown in Table 2, the factors included Realistic Goal Setting, Use of Feedback, Future Appraisal, and Use of Resources. All factors have eigenvalues greater than 1.0. We removed the item "I am able to clearly formulate a goal" because it loaded high on two factors (Realistic Goal Setting and Use of Resources). The four factors showed good reliabilities and a total explained variance of 56%.

### Side Effect Measures

We measured self-efficacy beliefs by using the translated short version of the General Self-Efficacy

**Table 2. Items, Factor Loadings, Explained Variance, and Internal Consistency of the Proactive Competence Scale (PCS)**

Item, Variance, or Consistency	Realistic Goal Setting	Use of Feedback	Future Appraisal	Use of Resources
“I am able to . . .”				
really do what I wanted to do	0.73			
maintain	0.68			
make realistic plans	0.65			
translate my wishes into plans	0.63			
find solutions	0.53			
recognize my own barriers	0.50			
recognize my possibilities and opportunities	0.46			
find alternatives if one solution does not work	0.43			
take a moment to appreciate my successes		0.72		
learn from setbacks		0.70		
reward myself for things that go well		0.69		
see the positive sides to failure		0.62		
check to see if I accomplish what I wanted to		0.48		
assess future developments			0.78	
anticipate the future			0.74	
appraise my environment			0.64	
recognize first signals of undesired changes			0.50	
ask for social support				0.78
ask for support when things become difficult				0.78
be open for suggestions and advice from others				0.61
listen to my body				0.59
Explained variance (%)	14.8	14.4	13.8	13.1
Internal consistency (Cronbach’s $\alpha$ )	0.81	0.76	0.74	0.70

Scale (Bosscher & Smit, 1998). The scale consists of 12 items (Cronbach’s  $\alpha = 0.77$ ), such as “When I set important goals for myself, I rarely achieve them,” with response categories ranging from 1 (I never do so) to 6 (I do so very often). We recoded this scale with higher values meaning higher self-efficacy.

In order to measure participants’ tendency to worry, we administered the Penn State Worry Questionnaire (Molina & Borkovec, 1994), for which there was high reliability (Cronbach’s  $\alpha = 0.94$ ). The 16 items (e.g., “I am always worrying about something,” with a 5-point format, from not at all typical to very typical) assess a clinically significant tendency to worry without regard to specific topics, and high values mean a high tendency to worry.

To measure negative mood, we used the Tension subscale of the Profile of Mood States (Wald & Mellenbergh, 1990). Participants assessed how they felt over the past few days, using a list of six adjectives. Responses categories ranged from 1 (not at all) to 5 (very much; Cronbach’s  $\alpha = 0.88$ ).

### *Predictor Variables for Differential Effects*

We measured proactive coping orientation by using the Preventive Coping subscale from the Proactive Coping Inventory (Greenglass, 2003). This subscale (Cronbach’s  $\alpha = 0.84$ ) deals with the anticipation of potential stressors and the initiation of preparation before these stressors fully develop. The original scale contains 10 items; we omitted the

single item on developing job skills, as we deemed this question to be irrelevant for the participants. Sample items are “I think ahead to avoid dangerous situations” and “I plan for future eventualities,” and answer categories ranged from 1 (I never do so) to 6 (I do so very often).

The Consideration of Future Consequences Scale (Strathman, Gleicher, Boninger, & Edwards, 1994) measures the extent to which people consider distant versus immediate consequences of potential behaviors. It includes 12 items, such as “I only act to satisfy immediate concerns, figuring the future will take care of itself” and the answer categories range from 1 (extremely characteristic) to 5 (extremely uncharacteristic). High values reflect the tendency of a person to consider future consequences (Cronbach’s  $\alpha = 0.80$ ).

To measure subjective well-being, we used the short version of the Subjective Well-Being Scale for the Elderly (van Linschoten, Gerritsen, & Romijn, 1993). The eight items cover subjective well-being with regard to health, social contacts, self-esteem, positive affects, and negative affects; response categories range from 1 to 3 (Cronbach’s  $\alpha = 0.81$ ). We recoded this scale so that high values represent high levels of subjective well-being.

We collected all measures at T0, T1, and T2. In addition, at T0, participants answered questions about their age, gender, marital status, current employment situation, and highest educational status. Furthermore, participants evaluated their health status on a 5-point scale (very good to very bad), to give an appraisal of their physical limitations

Table 3. Means, Standard Deviations, Reliabilities, and Correlations of Study Variables at Baseline

Variable	M	SD	Cronbach's $\alpha$	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Realistic goal setting	2.87	0.42	0.81	1.00													
2. Use of feedback	2.79	0.48	0.76	0.484**	1.00												
3. Future appraisal	2.79	0.47	0.74	0.482**	0.476**	1.00											
4. Use of resources	2.77	0.53	0.70	0.498**	0.460**	0.317**	1.00										
5. Self-efficacy beliefs	49.46	6.69	0.77	0.560**	0.369**	0.299**	0.244**	1.00									
6. Worry Scale	48.62	12.06	0.94	-0.199*	0.381**	-0.003	-0.170*	-0.418**	1.00								
7. Negative mood	4.97	5.13	0.88	-0.192*	-0.273**	-0.042	-0.171*	-0.258**	0.490**	1.00							
8. Proactive orientation	33.13	6.92	0.84	0.342**	0.278**	0.389**	0.147	0.225**	0.152	0.034	1.00						
9. Consideration of future consequences	36.34	7.80	0.80	0.052	0.084	0.170*	-0.075	0.050	0.221**	0.084	0.440**	1.00					
10. Subj. well-being	19.35	3.70	0.81	0.361**	0.408**	0.054	0.270**	0.364**	-0.542**	-0.696**	-0.018	-0.186*	1.00				
11. Sex (male = 1, female = 2)	1.67	0.47	—	0.074	0.129	0.045	0.067	-0.078	0.105	-0.019	0.016	-0.062	-0.062	1.00			
12. Age (years)	61.46	5.49	—	0.016	0.109	0.091	-0.035	0.011	-0.134	-0.063	0.040	-0.014	0.086	-0.057	1.00		
13. Level of education	3.02	0.905	—	0.128	-0.033	-0.006	0.010	0.069	0.178*	0.158	0.213**	0.154	-0.112	-0.121	-0.213**	1.00	
14. Subjective health	3.71	0.603	—	0.170*	0.128	0.023	0.179*	0.104	-0.199*	-0.296**	-0.016	-0.089	0.362**	-0.133	0.087	-0.073	1.00

\* $p < .05$  (two-tailed); \*\* $p < .01$  (two-tailed).

(not at all limited to very limited), and to evaluate their fitness (fit, rather fit, or not fit). At T1, participants in the experimental group reported how many sessions they attended and how important their personal goals were (not important, more or less important, or important). They reported whether they were able to formulate their personal goals in concrete (yes or no) and achievable (yes or no) terms, and whether they finally achieved their goals (yes—more or less—no).

## Analyses

We tested differences between the groups by using analyses of variance for repeated measures with age and gender as control variables. We examined planned contrasts (method repeated) to qualify the results. In addition, we tested the changes more conservatively by imputing missing cases with their own T0, respectively T1 values (intention to treat analyses). We determined the effect sizes for the experimental group by means of Cohen's  $d$  (small,  $d = 0.20$ ; medium,  $d = 0.50$ ; large,  $d = 0.80$ ; see Cohen, 1992), using the pooled standard deviation method. We examined differential effectiveness by means of hierarchical regression analyses in two steps; the first step entailed the baseline value of the dependent variable and in the second step the predictor variables were added. Because of the number of tests, we interpret only effects with  $p < .01$  as significant.

## Results

Table 3 shows moderately high correlations among the proactive competencies, which supports the suggestion that they measure different but related aspects. General self-efficacy beliefs were positively associated with all four competencies. The negative side effect variables (6 and 7; see Table 3) correlated negatively with the outcome measures except for competency Future Appraisal (3), which showed no significant correlation. The three psychological variables (8–10) appeared to be associated with the outcome variables in different ways. Finally, most demographic characteristics (11–14) were not correlated with proactive competencies. In sum, the outcome measures correlated in the expected way with each other and with other variables, except with the construct labeled consideration of future consequences.

In Table 4, the results for proactive coping competencies, general self-efficacy, worry, and negative mood are presented for the three measurement times. Analyses of variance for repeated measures with age and gender as control variables demonstrated significant Time  $\times$  Group interactions for the four proactive competencies. Post hoc contrasts qualified these effects: for all four proactive competencies the

**Table 4. Means and Effect Sizes of Outcome Measures and Side Effect Measures With Age and Gender as Control Variables**

Variable	T0	T1	T2	Time × Group Interaction	Contrasts (Method Repeated)	Effect Sizes
Realistic goal setting				$F(131, 2) = 11.4, p < .001$	T0 vs T1, $F(131, 1) = 17.5, p < .001$ T1 vs T2, $F(131, 1) = 1.8, ns$	T0/T1: 0.82 T0/T2: 0.61
CG	2.94	2.97	2.97			
EG	2.84	3.16	3.09			
Use of feedback				$F(130, 2) = 10.5, p < .001$	T0 vs T1, $F(130, 1) = 16.7, p < .001$ T1 vs T2, $F(130, 1) = 3.8, p = .055$	T0/T1: 0.59 T0/T2: 0.59
CG	2.82	2.78	2.89			
EG	2.73	3.02	3.00			
Future appraisal				$F(130, 2) = 5.6, p = .004$	T0 vs T1, $F(130, 1) = 10.7, p = .001$ T1 vs T2, $F(130, 1) = 2.7, ns$	T0/T1: 0.46 T0/T2: 0.34
CG	2.80	2.81	2.84			
EG	2.79	3.00	2.95			
Use of resources				$F(132, 2) = 6.1, p = .003$	T0 vs T1, $F(132, 1) = 9.3, p = .003$ T1 vs T2, $F(132, 1) = 1.2, ns$	T0/T1: 0.74 T0/T2: 0.68
CG	2.82	2.93	2.98			
EG	2.71	3.07	3.04			
General self-efficacy				$F(132, 2) = 1.2, ns$	T0 vs T1, $F(132, 1) = 1.39, ns$ T1 vs T2, $F(132, 1) = 2.29, ns$	—
CG	49.76	49.77	49.44			
EG	49.52	50.36	49.01			
Worry				$F(132, 2) = 0.069, ns$	T0 vs T1, $F(132, 1) = 1.39, ns$ T1 vs T2, $F(132, 1) = 0.60, ns$	—
CG	49.25	47.90	47.67			
EG	47.44	47.36	46.37			
Negative mood				$F(131, 2) = 0.039, ns$	T0 vs T1, $F(131, 1) = 0.50, ns$ T1 vs T2, $F(131, 1) = 0.01, ns$	—
CG	4.62	4.58	4.42			
EG	4.56	4.10	3.90			

Notes: T0 = baseline; T1 = after program is finished; T2 = 3 months after the post-test; CG = waiting control group ( $n = 74, 67, \text{ and } 60$  at T0, T1, and T2, respectively); EG = experimental group ( $n = 84, 74, \text{ and } 71$  at T0, T1, and T2, respectively). For effect sizes, Cohen's  $d$  is for the experimental group, only for variables improving significantly.

interaction was significant between T0 and T1, but not between T1 and T2. This pattern means that all four proactive coping competencies changed in the postulated direction: They increased after the intervention and did not decrease after 3 months. We observed no change in the control group. The same pattern of results emerged when we conducted one multivariate analysis of variance for repeated measures for all competencies simultaneously. Testing more conservatively by imputing missing cases with their own T0, respectively T1 values, did not change the results. Results of effect size analyses (Table 4) revealed small effects for the Future Appraisal factor, medium intervention effects for the Use of Feedback and Use of Resources factors, and a large intervention effect for the Realistic Goal Setting factor at T1.

The longitudinal results for general self-efficacy revealed no main effects and no Group × Time interaction, and subsequently no meaningful post hoc contrasts; thus, the intervention produced no generalization effects with regard to self-efficacy beliefs. Furthermore, the tendency to worry and the

negative mood of participants did not differ between measurement times. These results indicate that the intervention did not produce negative side effects such as rumination or mood changes. Finally, we found no interaction effects with age or gender.

In order to examine differential effectiveness, we further analyzed the intervention effects in the experimental group. We examined the predictive value of three variable groups: psychological and demographic characteristics at baseline, and program specific characteristics at T1.

Table 5 shows the hierarchical regression analyses for the psychological characteristics. All dependent variables were best predicted by their pretest value. In addition, participants with lower levels of well-being at T0 had a better chance of increasing their feedback skills at T1. The realistic goal setting competency at T2 could be predicted by high levels of proactive orientation and low levels in considering the future consequences of one's own behavior. The increase in the future appraisal competency at follow-up could be predicted by high levels of proactive orientation.

Table 5. Proactive Orientation, Tendency to Worry, Consideration of Future Consequences, and Subjective Well-Being Regressed on the Intervention Effect of Proximal Outcome Measures for the Experimental Group at Post-Test and Follow-Up

Post-Test or Follow-Up	Realistic Goal Setting		Use of Feedback		Future Appraisal		Use of Resources	
	B	R <sup>2</sup> Change	B	R <sup>2</sup> Change	β	R <sup>2</sup> Change	β	R <sup>2</sup> Change
Post-test (T1)								
Step 1: Pretest of concerned variable (see column title)	.390**	.237**	.326**	.129**	.533**	.347**	.473**	.268**
Step 2: Pretest value of . . .		.069		.123*		.057		.045
Proactive orientation	.229		.081		.208		.209	
Tendency to worry	.118		.269*		.021		.071	
Future consequences	-.217		-.107		-.057		-.038	
Subj. well-being	.162		-.354**		.168		.075	
R <sup>2</sup>		.306		.251		.404		.313
Adjusted R <sup>2</sup>		.252		.193		.356		.259
Follow-up (T2)								
Step 1: Pretest of concerned variable (see column title)	.375**	.300**	.479**	.244**	.409**	.307**	.500**	.310**
Step 2: Pretest value of . . .		.139**		.110*		.123*		.059
Proactive orientation	.430**		.145		.406**		.221	
Tendency to worry	.003		.214		.025		.138	
Future consequences	-.366**		-.256*		-.087		-.096	
Subj. well-being	.110		.246		.088		.113	
R <sup>2</sup>		.439		.354		.429		.369
Adjusted R <sup>2</sup>		.393		.302		.382		.318

Notes: For the beta values shown, the final beta is a result of Step 2 of the hierarchical regression analysis.  
\* $p < .05$ , \*\* $p < .01$ .

None of demographic characteristics predicted the dependent variables; the  $r^2$  changes for the second step did not reach significance at either T1 or T2.

The final regression analyses examined whether intervention-specific variables predicted the outcome measures at T1 and T2 (Table 6). For two of the four proactive competencies, intervention-specific characteristics had a significant predictive value in addition to the pretest value of the relevant variable (Table 6). Participants who succeeded in formulating the personal goal in concrete terms reported a significant increase in the following competencies: realistic goal setting, future appraisal, and use of resources. There was no additional value of intervention-specific characteristics in predicting the follow-up measurement.

## Discussion

We developed a brief educational program based on proactive coping theory, and we tested its effectiveness in a prospective randomized control trial. The results of this study confirmed the proposed changes in outcome measures; that is, after the program, participants reported higher levels of proactive competencies. The stability of the intervention effects was supported by the preservation of these effects 3 months after program completion. We draw the following conclusions from these results. First, brief educational interventions (4 weekly sessions) can substantially improve competencies in middle and late adulthood with regard to future-related

behavior. Second, proactive coping theory is a suitable framework for the development of a preventive intervention for people aged 50 years and older. Third, results showed that the focus on proactive coping as a set of competencies rather than a disposition is useful in investigating the malleability of proactive coping. When proactive coping was assessed as a relatively stable behavioral preference, evaluation of interventions often failed to find any changes in proactive coping (e.g., Kuijer, De Ridder, Colland, Schreurs, & Sprangers, in press). All four competencies showed substantial improvement after the program, but they differed in effect sizes. Participants improved most with regard to realistic goal setting and use of resources and somewhat less in learning about the use of feedback. This result is in accordance with the time invested in the competencies concerned; feedback was dealt with in the last session, whereas the other two were addressed in more than one session. The future appraisal competence showed a small effect size, which was slightly lower than that of the other competencies. We believe that future appraisal is by definition the most complex ability because it is associated with the least concrete behaviors and therefore is more difficult to develop. Nevertheless, participants in the program also succeeded in improving this ability. The intervention effects had no generalization effects with regard to self-efficacy. One explanation is that participants in this study were already rather high on self-efficacy at baseline. However, studies with other self-management interventions involving



**Table 6. Intervention-Specific Characteristics Regressed on the Intervention Effect of Proximal Outcome Measures for the Experimental Group at Post-Test and Follow-Up**

Post-Test or Follow-Up	Realistic Goal Setting		Use of Feedback		Future Appraisal		Use of Resources	
	$\beta$	$R^2$ change	$\beta$	$R^2$ change	$\beta$	$R^2$ change	$\beta$	$R^2$ change
Post-test (T1)								
Step 1: Pretest of concerned variable (see column title)	.397**	.220**	.302*	.133**	.483**	.357**	.481**	.280**
Step 2: Post-test value of ...		.103		.064		.166**		.169**
Presence of sessions	.019		.051		-.001		.014	
Importance goal	.021		.030		.052		-.120	
Concrete formulation goal	.345**		.204		.399**		.341**	
Achievable formulation goal	-.215		-.249		-.190		-.382**	
Goal achievement	.000		.022		.159		.082	
$R^2$		.323		.197		.524		.449
Adjusted $R^2$		.258		.121		.477		.396
Follow-Up								
Step 1: Pretest of concerned variable (see column title)	.552**	.300**	.498**	.242**	.494**	.292**	.508**	.310**
Step 2: Post-test value of ...		.075		.037		.055		.140*
Presence of sessions	.019		.117		.107		.137	
Importance goal	-.150		-.018		-.051		-.104	
Concrete formulation goal	.067		.053		.164		.219*	
Achievable formulation goal	.151		.117		.019		-.129	
Goal achievement	.117		.017		.131		.236*	
$R^2$		.375		.278		.347		.450
Adjusted $R^2$		.312		.207		.281		.396

Notes: For the beta values shown, the final beta is a result of Step 2 of the hierarchical regression analysis.  
\* $p < .05$ , \*\* $p < .01$ .

elderly people also did not find improvement in self-efficacy (Kocken & Voorham, 1998; Schuurmans, 2004). In the present study, we also examined whether the intervention had negative consequences, in the form of increased rumination or negative mood states. Fortunately, we found no negative side effects. This result is in accordance with clinical observations from the trainers and with participants' evaluations (Bode et al., 2006). The successful combination of risk-management and goal-management approaches of proactive coping might be responsible for this outcome.

In the final analyses, we investigated differential effects in the experimental group. We expected three clusters of variables to contribute to the prediction of intervention effects. Demographic characteristics had no predictive value. This result is surprising, because we expected that people with more resources would be able to invest more in proactive coping. It might reflect the easy accessibility of the program and shows that all participating age groups can profit from the intervention. Psychological characteristics predicted one post-test and several follow-up effects on proactive competencies. We expected the result that proactive orientation facilitated improvement of proactive competencies, because it should lessen participants' doubts about developing proactive competencies. The effect with regard to the consideration of future consequences variable was

unexpected; higher levels at baseline predicted lower improvement of the realistic goal setting competency at follow-up. It could be that people who scored higher on this scale were overly optimistic about their proactive competencies before the program. Confrontation during the program could cause people to scale back their self-evaluation to realistic proportions, leading them to report lower levels of competencies after the program. An examination with then-test methodology would clarify this postulated response shift (Schwartz, Sprangers, Carey, & Reed, 2004).

Regarding intervention-specific characteristics, we found that only the concrete formulation of the individual goal facilitated improvement of proactive competencies. The concrete formulation of goals seems to be the necessary starting point for improving goal-setting skills such as finding solutions, maintaining goal attendance, and finding alternatives if one solution does not work. The concrete formulation also might serve as anchor point for the appraisal of future changes. In sum, the analyses of differential effectiveness give relatively few hints for offering the program to specific groups. In our view, these findings support the strategy to work with heterogeneous groups and to make the program easily accessible.

Finally, some methodological considerations should be mentioned. This study employed a prospective randomized control trial design, and we had

acceptable dropout rates. These characteristics, together with the use of highly reliable instruments, suggest that the results of this investigation are valid.

A point for improvement in future studies is that not all outcome variables should be based on self-report because the effects of social desirability cannot be ruled out. Observational data might offer an alternative solution because they involve observable behavior, and thus applied competencies. However, observation has other inaccuracy problems and involves considerably more time and effort. Another option might be a reality test of proactive competencies, for example, by asking participants to give advice to someone else preparing for aging, bearing the proactive coping principles in mind. A similar thinking-aloud method was developed for investigating wisdom (Baltes & Staudinger, 2000).

In this study, we presented effects on the outcome measures that focus on improvement of competencies. We believe that, in the long run, an increase in proactive coping competencies will support successful aging. Therefore, we plan additional research on outcomes that will concentrate on long-term improvements in the personal experience of aging as well as subjective and psychological well-being.

To conclude, in the present study we found that an educational program based on proactive coping theory improved proactive competencies. Three months after the intervention was finished, we found that these results remained stable. As a result of these particularly positive effects and the lack of negative side effects, the "In Anticipation of the Golden Years" program has been integrated in the regular program of the participating health service institutes, and we are now planning a national implementation of the program.

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