

# The effectiveness of a bibliotherapy in increasing the self-management ability of slightly to moderately frail older people

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## Abstract

**Objective:** Self-management ability (SMA) is the ability to obtain those resources necessary for the production of well-being. With age, SMA becomes increasingly important, if one has a large variety of resources, physical and psychosocial losses due to the aging process can be substituted or compensated for. This study examined whether an increase in SMA would ensure sustainable levels of positive well-being among slightly to moderately frail older people.

**Methods:** A bibliotherapy was developed to increase the SMA of slightly to moderately frail older people, and to help these persons to sustain a certain level of well-being. The effectiveness of this bibliotherapy was examined by comparing the SMA, mastery, and subjective well-being of 97 older people participating in the bibliotherapy to those of 96 older people in a delayed-treatment control condition.

**Results:** The bibliotherapy resulted in a significant increase in SMA and mastery compared to the delayed-treatment control condition, and for SMA, this effect still existed 6 months after the intervention. The increase in SMA among older people who received the bibliotherapy prevented a decline in well-being as expected, but only in the short-term.

**Conclusion:** The current findings show that it is possible to counteract an age-related decline in well-being, even with only slight to moderate levels of frailty.

**Practice implications:** Cheap and easily accessible interventions, like the self-management bibliotherapy described in this article, may provide a useful addition to more traditional gerontological interventions.

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**Keywords:** Successful aging; Self-management ability; Frailty; Subjective well-being

## 1. Introduction

“To know how to grow old is the master work of wisdom, and one of the most difficult chapters in the great art of living”. As this quotation from the Swiss author Henri Frederic Amiel suggests, successful aging is not just a matter of growing old. It requires the proactive management of resources in an environment of increasing losses and declining gains [1]. In modern society, this process of self-management is becoming increasingly important. Due to medical and social developments, the number of healthy years after retirement has increased. Because this is a relatively unstructured stage of life with few clear social

roles [2], giving meaning to this period requires a certain amount of pro-activity. Self-management interventions can provide older people with the abilities necessary for this. Furthermore, with a growing elderly population and increasing cutbacks in health care, our society faces the difficult task of making all ends meet. Increasing the self-management of older people could in part relieve this burden on the health care system: with higher levels of Self-management ability (SMA), older people will be better able to maintain an independent and autonomous lifestyle for a longer period of time. In this study, we developed a bibliotherapy aimed at increasing the SMA of slightly to moderately frail older people, which differs in a number of ways from existing self-management interventions.

First, most self-management interventions focus on teaching people how to cope with specific age-related

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problems, like depression (e.g., [3,4]), loneliness (e.g., [5]), the increased risk of falling (e.g., [6]), insomnia (e.g., [7]), or chronic illnesses [8–10]. However, a substantial number of older people suffers from a mixture of problems in multiple life domains. This mixture of problems can create a gerontological condition called frailty. Frail older people are vulnerable to adverse outcomes like the dependence on others, chronic illness, and admission to an institution (e.g., [11]). Because frail older people lack reserves in multiple life domains, they may benefit more from a self-management intervention that provides them with a general cognitive and behavioural repertoire for dealing with different kinds of age-related problems rather than from interventions focusing on one specific problem.

Second, many interventions address the problems of older people who have already suffered substantial loss, like those residing in nursing homes. However, an increasing number of studies suggest that preventing age-related decline may be more effective than dealing with its consequences (e.g., [11,12]). This is why self-management interventions may best be aimed at older people with beginning problems in physical or psychosocial life domains, without these problems being so serious as to have already resulted in substantial loss.

Third, although many intervention-studies of self-management have succeeded in affecting outcomes like depression [3], psychosocial functioning [13], and pain perception [9], there has been little theorizing concerning the specific self-management abilities underlying such effects. In some studies, it was suggested that general abilities like self-efficacy were responsible for the positive effects of self-management interventions (e.g., [14]). However, abilities like self-efficacy are quite unspecific unless they are aimed at a certain goal. The self-management intervention developed in the current study is based on the theory of successful self-management of aging (SSMA [15]), which gives a specification of the abilities that constitute an effective self-manager, and the goals at which these abilities should be directed. Because of its specificity, this framework offers clear guidelines for the development and evaluation of a self-management intervention.

Fourth, the format of a bibliotherapy may provide an important alternative to more traditional interventions. Although self-management interventions aim at increasing the autonomy of older people in the long-term, many of these interventions use extensive counseling and group sessions in the short-term (e.g., [6,16]). Bibliotherapy, i.e., reading a self-help book for the treatment of psychosocial problems [17], may provide an important cost- and time-saving alternative to these extensive interventions. Because a bibliotherapy does not require face-to-face counselling, it can be effective in reaching a large group of older people who do not yet require institutionalized care. Furthermore, there is evidence indicating that bibliotherapy can be just as effective as more traditional interventions. For example, in studies aimed at reducing depression among older people

[4,18], or at the improvement of mind-body wellness for older adults with chronic illness [19], written or videotaped self-help treatments resulted in a clinically significant change compared to the change noted in a delayed-treatment control condition.

To extend the existing self-management interventions in respect of the four aspects mentioned above, we developed a self-management bibliotherapy for slightly to moderately frail older persons. The aim of this bibliotherapy was to increase SMA as defined by the SSMA theory [15]. According to this theory, SMA are the abilities people need for managing resources in such a way that sustainable positive well-being is reached. The SSMA theory distinguishes six self-management abilities: having a positive frame of mind, being self-efficacious, taking initiative, investing in resources for long-term benefits, taking care of a variety of resources, and taking care of a multifunctionality of resources.

Based on the social production functions theory [20], Steverink et al. argue that these abilities should be directed at the realization of physical and social dimensions of well-being in order to lead to successful aging. Physical well-being is realized when people obtain enough comfort, that is, the satisfaction of basic physical needs (e.g., food, drink, rest, and warmth), and stimulation, that is, the pleasant range of physical and mental activation ([20] also see [21]). Social well-being is realized when people receive enough affection, behavioural confirmation, and status [20], “as forms of positive evaluations for what a person is (affection), does (behavioural confirmation) and has (status)” [21].

To examine whether the bibliotherapy indeed increased the SMA of slightly to moderately frail elderly, and whether this increase helped them to maintain their present levels of well-being, we tested the following hypotheses. We expected that older people who received our bibliotherapy would show a greater increase in SMA than those who participated in the control condition. We expected to find this effect using a specific instrument addressing the underlying theoretical framework of the bibliotherapy, i.e., the Self-Management Ability-Scale (SMA-S [22]), and using an instrument measuring a more general concept of control, i.e., the mastery scale of Pearlin and Schooler [23]. We expected that this effect of our bibliotherapy on SMA would still exist after 6 months. Furthermore, we expected that older people who had received our bibliotherapy would show more maintenance of subjective well-being than those who participated in the control condition, because of the increase in SMA. Last, we expected that this effect of our bibliotherapy on well-being would still exist after 6 months.

## 2. Methods

### 2.1. Intervention

To increase the SMA of slightly to moderately frail older people, and influence their subjective well-being, we

developed a bibliotherapy, which was called “GRIP on life”. This bibliotherapy was introduced as a correspondence course on how to maintain a firm grip on life with increasing age. It consisted of five different parts, each composed of 11–19 pages, which were printed one-sided in black and white. For the layout of the text, we hired a graphic design agency with experience in the field of health care interventions (e.g., [24]).

The contents of the different parts were all based on the theoretical framework behind SMA [15]. In each part, information about SMA was given, alternated with examples of fictive individuals to illustrate the importance of SMA in daily life. Furthermore, exercises were given to evaluate one’s own situation. These exercises first contained the request to list one’s activities in a particular domain of physical or social well-being, for example, “I engage in the following activities to relax . . .” Blank spaces were left so participants could write down their answers. Next, participants were asked to evaluate whether these activities were satisfactory, for example, “In your opinion, do you obtain enough relaxation?” Subsequently, information was offered on how to improve one’s SMA in those physical and psychosocial domains that participants were not satisfied with. The core message of this information was repeated in a separate text box. Each part ended with an exercise in which the new abilities could be practiced.

To make sure that our target population would perceive the bibliotherapy as clear and relevant, we formed a focus group of older people to evaluate its contents prior to our experiment. In discussions with this target group, we discovered that the part addressing status appeared to be highly susceptible to social desirability. The target group associated the need for status with negative personality characteristics like arrogance and self-display, and were unwilling to engage in exercises aimed at increasing status. Because it was hard at that moment to find a suitable format to address status, this dimension of well-being was omitted from the final version of the bibliotherapy.

Part 1 focused on the ability of having a positive frame of mind. We based this part on elements of the Rational Emotive Therapy by Ellis [25]. The participants were asked to list their thoughts, to analyze whether these thoughts were excessively negative, and if so, to replace them with more positive thoughts. In part 2, we addressed the importance of self-efficacy and taking initiative. The importance of goal setting was stressed, and ways were given to overcome the barriers to one’s goal, for example, by not making goals too big, by taking small steps, and by trying to have faith in the things one wishes to achieve. Furthermore, the participants were taught to formulate a plan of action [26], which contains a specific description of what one is going to do, and when one is going to do it. Part 3 was about the importance of taking initiative and of self-efficacy with regard to comfort and stimulation. The participants were encouraged to think about new ways of attaining these physical dimensions of well-being. At the end of this part,

they formulated an attainable plan of action to actually pursue these goals in the following week. Part 4 focused on the importance of taking initiative and of self-efficacy with regard to affection and behavioural confirmation. Again, the participants were asked to think of ways to attain these social dimensions of well-being, and to follow their plans of action. The fifth, and last, part was about the importance of variety and investment. The participants were asked to think about substitutes for their favourite activities or persons. If substitution was lacking, the participants were encouraged to explore new activities or ways of meeting new people. Multifunctionality was addressed throughout the bibliotherapy by offering examples of how physical and social dimensions of well-being can be combined.

## 2.2. Procedure

In August 2001, a questionnaire was sent to a random sample of 3000 community-dwelling older people aged 65 years and older. The addresses of this community sample were randomly drawn from the register of six municipalities in the north of The Netherlands. These municipalities consist of smaller and larger sites and have an individual income comparable to the national mean. All municipalities selected at random the addresses of 500 community-dwelling older people aged 65 years and older.

From the 45% of the addressees who returned the questionnaire ( $N = 1338$ ), a selection was made of respondents who scored slightly to moderately frail (score 1 until 5) on the Groningen Frailty Indicator (GFI; see Section 2). These older people ( $N = 825$ ) were approached with the request to participate in the intervention. If they were willing to participate, they were asked to return a pre-test. Of the persons who were approached, 22% returned the pre-test ( $N = 193$ ). For purposes of randomisation, these pre-tests were numbered in the order in which they came in. Subsequently, participants receiving an odd number were assigned to the experimental condition, while participants receiving an even number were assigned to the control condition. The 97 participants that were assigned to the experimental condition received the bibliotherapy right away, while the 96 participants that were assigned to the control condition were told that they were on a waiting list, and would receive the bibliotherapy in 6 months.

The experimental group received a new part of the bibliotherapy every 2 weeks. Before they received the following part, they had to return a short questionnaire on the features of SMA that were addressed in the previous part. This was to make sure that participants would actually complete the bibliotherapy, and to get an idea of how they appreciated it. The control group received similar questions concerning features of SMA every so often, to counteract the effects of a possible attention bias and the priming of SMA concepts among the participants in the experimental group. After the participants in the experimental group had finished the bibliotherapy, both groups received the first post-test. Six

months after this first post-test had been sent, both groups received the second post-test.

### 2.3. Sample

#### 2.3.1. Experimental group

After completion of the pre-test, 97 older people were randomly assigned to the experimental group. Eighty-two percent of these older people completed the bibliotherapy ( $N = 79$ ). Reasons given for not completing the bibliotherapy were health problems, being too busy, and not perceiving the bibliotherapy as relevant to one's own situation. Forty-two percent of the participants who completed the bibliotherapy was male and 58% was female, which was about the same distribution as in the original sample assigned to the experimental group. The average age of the participants was 72.91 (S.D. = 6.20), the oldest participant being 91 years old. All participants in the experimental group were slightly to moderately frail (score 1 until 5 on the GFI; see Section 2.4), which mainly signified a high level of psychosocial problems, in combination with minor physical problems. Table 1 shows the characteristics of the experimental and the control group on the physical, cognitive and psychosocial dimensions of frailty. All the participants who completed the bibliotherapy returned the first post-test, with 98% also returning the second post-test ( $N = 77$ ).

#### 2.3.2. Control group

After completion of the pre-test, 96 older people were randomly assigned to the control group. Ninety percent of these older people returned the two-weekly questionnaires on features of SMA ( $N = 86$ ). Reasons given for not

returning the questionnaires on SMA were health problems and perceiving the questions as unpleasant. Thirty-five percent of the participants who returned the questionnaires on SMA was male and 64% was female, which was about the same distribution as in the original sample assigned to the control group. The average age of the participants was 73.71 (S.D. = 6.24), the oldest participant being 91 years old. As in the experimental group, participants' level of frailty mainly constituted of a high level of psychosocial problems, in combination with minor physical problems (see Table 1). All the participants who returned the two-weekly questionnaires on SMA also returned the first post-test, with 95% returning the second post-test ( $N = 82$ ).

### 2.4. Measures

#### 2.4.1. Frailty

To determine the levels of frailty of the participants, we used the Groningen Frailty Indicator [27]. This is a simple questionnaire designed to screen older people for beginning physical, cognitive, and psychosocial problems. An example of a physical item is "Are you able to do your shopping single handed without any help?" An example of a psychosocial item is "Do you sometimes miss people around you?" The GFI consists of 15 items, which can be answered with "yes" or "no". Additionally, the psychosocial items and an item on memory complaints can be answered with "sometimes". Answers indicating a high level of frailty were assigned one point and answers indicating a low level of frailty were assigned zero points. The answer "sometimes" was assigned one point for the psychosocial items, and zero points for the item on memory complaints. These points were summed, which resulted in a range from 0 (not frail) to 15 (severely frail). The GFI has shown to be an internally consistent scale with positive indications of construct and clinical validity. The clinical assessment of frailty level by a panel of geriatric experts corresponded with scale-scores on the GFI. These experts considered a GFI-score of 5 or higher as moderately to severely frail [28].

#### 2.4.2. Measure of self-management ability.

To measure SMA, we used the Self-Management Ability-Scale [22]. This scale consists of six subscales, one for every aspect of SMA, and each subscale contains five items. The overall scale's internal consistency was 0.90. Within the subscales of taking initiative, investing, self-efficacy, variety, and multifunctionality, the different abilities are related to the physical and social dimensions of well-being described in the social production function theory by Lindenberg [20]. The ability 'having a positive frame of mind' is considered a more general cognitive frame, therefore its subscale is not directly related to specific dimensions of well-being. The average sum score for the SMA-S ranges from 5 to 30, with a higher score meaning higher SMA.

Table 1

Number and percentage of participants reporting difficulties on the physical, cognitive and psychosocial items of the GFI

Groningen frailty indicator	Experimental group <sup>a</sup>		Control group <sup>b</sup>	
	N	Percentage	N	Percentage
<b>Physical domain</b>				
Difficulties shopping	5	5.2	4	4.2
Difficulties walking outside	2	2.1	1	1.0
Difficulties dressing/undressing	–	–	–	–
Difficulties going to the toilet	–	–	–	–
Hearing loss	12	12.4	13	13.5
Problems with sight	5	5.2	9	9.4
<b>Cognitive domain</b>				
Memory complaints	3	3.1	1	1.0
<b>Psychosocial domain</b>				
Experiencing an emptiness	48	49.5	48	50.0
Missing the company of others	51	52.6	51	53.1
Feeling abandoned	17	17.5	21	21.9
Feeling depressed	33	34.0	41	42.7
Feeling anxious	34	35.1	26	27.1

<sup>a</sup> Mean GFI = 2.69 (S.D. = 1.37).

<sup>b</sup> Mean GFI = 2.65 (S.D. = 1.41).

### 2.4.3. Mastery

To measure the more general concept of control, we used the mastery scale by Pearlin and Schooler [23]. This is a brief scale, consisting of seven items ( $\alpha = 0.74$ ), which measures the amount of control people experience over their lives. Answers could be given on a five-point scale, with a higher score indicating a higher sense of mastery. As expected, this scale was significantly related to the SMA-S, with the Pearson's correlation between both scales ranging from 0.19 up to 0.36 at the different times of measurement (i.e., the pre-test, and the first and the second post-tests).

### 2.4.4. Subjective well-being

To measure overall subjective well-being, we used the 15 item version ( $\alpha = 0.80$ ) of the SPF-Index Level Scale (SPF-IL [29]). This scale integrates both affective and cognitive components of well-being. It consists of five subscales, each representing one of the dimensions of well-being from the SPF theory [20]. An example of a question for affection is "Do people pay attention to you?" Answers could be given on a four-point scale, ranging from never (1) to always (4).

Table 2 contains the descriptive statistics (means, standard deviations) for the experimental and the control group on the SMA-S, mastery, and SPF-IL at the time of the pre-test, and the first and the second post-test.

### 2.5. Statistical analysis

Analysis of variance (ANOVA) with repeated measures was used to test the effectiveness of our bibliotherapy in increasing SMA and mastery. The measures of SMA and mastery were considered to be repeated measures of the within-subjects factor time of measurement (pre-test versus first post-test versus second post-test). Condition was considered as a between-subjects factor (coded +1 for the experimental condition and -1 for the control condition). The *F*-ratio was used to test the significance of mean differences between conditions. We used Cohen's *d* to describe the magnitude of group differences. This measure of effect size was calculated by subtracting the mean difference score (post-treatment - pre-treatment) of the control group from that of the experimental group, and dividing their difference by the pooled standard deviation.

A hierarchical regression analysis was performed to test the effect of our bibliotherapy on subjective well-being, and

to verify whether this effect was mediated by SMA. This analysis was preferred above an analysis of variance, as performed on SMA and mastery, because an ANOVA does not combine all the relevant testing into a single analysis [30]. In the first step of the regression analysis, pre-test scores on the SPF-IL were entered into the regression equation; in the second step, condition was entered; and in the third step, SMA at the time of the first post-test was entered. Because we had a clear expectation about the way in which the results of the experimental and the control group would differ, all effects were tested one-tailed.

## 3. Results

### 3.1. Evaluation of the self-management intervention

To examine how the experimental group regarded the self-management bibliotherapy, we asked them to answer a few questions concerning their views of each part. Furthermore, we left some spaces on each questionnaire for the participants to write down their personal remarks. In general, participants did not evaluate the five parts very differently. As shown in Table 3, most participants indicated that they liked the different parts and the assignments, and that they did not perceive the text, the assignments and the exercise at the end of each part as difficult. Furthermore, most participants indicated that they more or less learned from the assignments, that the parts made them more or less reflect on things. However, they also said that the parts did not contain much information that was new to them.

With regard to the personal remarks that the participants wrote down, some participants indicated that the bibliotherapy made them reflect more on their present lives: "A course that gives you food for thought . . . I enjoyed it a lot". Some participants indicated that they had actually changed their behavior as a consequence of the bibliotherapy: "My life was becoming a routine, but I kicked myself in the pants" "After part 2, I started making lists of the things I still want or have to do. Crossing them off makes me feel satisfied". Others indicated that they would use the bibliotherapy again in the future: "I will certainly keep the course close at hand in the difficult months to come" and "This course is never finished, I will continue thinking about it. I believe it can help me to shape the events in my life more consciously".

Table 2

Means and standard deviations for the experimental and the control group on measured variables at the time of the pre-test, the first post-test, and the second post-test

	Experimental group						Control group					
	Pre-test		Post-test 1		Post-test 2		Pre-test		Post-test 1		Post-test 2	
	<i>M</i>	S.D.	<i>M</i>	S.D.	<i>M</i>	S.D.	<i>M</i>	S.D.	<i>M</i>	S.D.	<i>M</i>	S.D.
SMA-S	21.20	2.79	21.73	1.96	21.27	2.12	21.50	2.89	20.96	3.13	20.94	3.02
Mastery	3.46	0.82	3.47	0.85	3.39	0.84	3.53	0.87	3.36	0.87	3.46	0.89
SPF-IL	2.84	0.42	2.81	0.33	2.80	0.38	2.81	0.38	2.71	0.42	2.73	0.46

Table 3

Range of evaluations for the different parts of the bibliotherapy in percentages of participants giving a certain answer

	Yes (%)	More or less (%)	No (%)
I liked reading this part	46–49	24–32	3–7
I came across things I did not know	4–9	25–30	40–49
I found the text difficult	2–9	11–14	60–65
I liked doing the assignments	18–27	43–47	13–16
I learned a lot from the assignments	12–19	35–42	23–28
I found it difficult to do the assignments	11–23	19–28	38–44
I did the exercise at the end of this part	22–44	21–25	15–35
I found it difficult to do this exercise	15–29	15–30	25–37
This part made me reflect on things	8–22	35–45	18–24

One participant succeeded extremely well in summarizing the intent of our bibliotherapy: “A lot of good advice for some, and a confirmation for others”.

Of course, we also received some negative responses. Some participants indicated that they did not recognize the problems we addressed: “I think the examples are rather exaggerated”, or that they were already familiar with ways of overcoming them: “In my opinion, this course does not fit me very well. I already know about and apply the things that are in it”. Some people indicated that the bibliotherapy did not address certain subjects that were important to them: “I have the feeling that my wife and children were not given enough weight in this bibliotherapy” and “I missed a connection with the church and religion, things that are of great importance to the lives of many people”. Although there were some people who perceived the bibliotherapy as being too easy: “I can’t help saying this, but the intellectual standard of this course is not particularly high”, fortunately, only a few people perceived the bibliotherapy as being too complicated.

### 3.2. Testing the hypotheses

#### 3.2.1. Self-management ability

First, we did an ANOVA using repeated measures to test the effectiveness of our bibliotherapy in increasing SMA. We found a main effect of time of measurement,  $F(2,314) = 3.16$ ,  $p < 0.05$ , with respondents reporting the highest level of SMA at the pre-test ( $M = 21.48$ ), and lower levels at the time of the first ( $M = 21.36$ ) and the second post-tests ( $M = 21.10$ ). As we expected, there was a significant interaction between time of measurement and condition,  $F(2,314) = 6.28$ ,  $p < 0.01$ . This interaction effect was found when the first post-test was contrasted with the pre-test,  $F(1,157) = 10.43$ ,  $p < 0.01$ ,  $d = 0.52$ , and when the second post-test was contrasted with the pre-test,  $F(1,157) = 4.64$ ,  $p < 0.05$ ,  $d = 0.4$ . As shown in Table 2, the experimental group showed an increase in SMA at the time of the first post-test ( $M = 21.73$ ) as compared to the pre-test ( $M = 21.20$ ), while the control group showed a decrease in SMA at the time of the first post-test ( $M = 20.96$ ) as compared to the pre-test ( $M = 21.50$ ). This difference in increase between the experimental and the control group still existed at the time of the second post-test ( $M$  experimental

group = 21.27;  $M$  control group = 20.94). Our hypotheses that the bibliotherapy would have a positive effect on SMA in slightly to moderately frail elderly, and that this positive effect would remain after 6 months, were confirmed.

#### 3.2.2. Mastery

To verify whether the positive effect of our bibliotherapy would also hold for a less specific, but more established measure of successful self-management, we did an ANOVA using repeated measures on different measures of mastery. We did not find a main effect of the time of measurement of mastery,  $F(2,314) = 2.52$ ,  $p = ns$ , nor did we find a significant interaction effect between time of measurement and condition overall,  $F(2,314) = 2.30$ ,  $p = ns$ . However, this interaction effect did reach significance when only the first post-test of mastery was contrasted with the pre-test,  $F(1,157) = 4.4$ ,  $p < 0.05$ ,  $d = 0.31$ . As shown in Table 2, the level of mastery of the experimental group remained about the same at the time of the first post-test ( $M = 3.47$ ) as compared to the pre-test ( $M = 3.46$ ), while the control group showed a decrease in mastery at the time of the first post-test ( $M = 3.36$ ) as compared to the pre-test ( $M = 3.53$ ). This difference between the experimental and the control group ceased to exist at the time of the second post-test: when the second post-test of mastery was contrasted with the pre-test, we found no significant interaction between time of measurement and condition,  $F(1,157) = 0.16$ ,  $p = ns$ .

#### 3.2.3. Subjective well-being

To test our prediction that participants in the experimental condition would show more maintenance of well-being than participants in the control condition, we first entered pre-test

Table 4

Hierarchical regression analysis of level of well-being at the time of the first post-test

	Model 1		Model 2		Model 3	
	$\Delta F$	$B$	$\Delta F$	$\beta$	$\Delta F$	$B$
Pre-test well-being	168.13	0.71 <sup>b</sup>	3.9	0.71 <sup>b</sup>	65.21	0.57 <sup>b</sup>
Condition				0.11 <sup>a</sup>		0.05
Post-test SMA						0.40 <sup>b</sup>
$R^2$		0.51		0.52		0.66
$F$		168.13		87.51		103.2

<sup>a</sup>  $p < 0.05$ .

<sup>b</sup>  $p < 0.001$ .

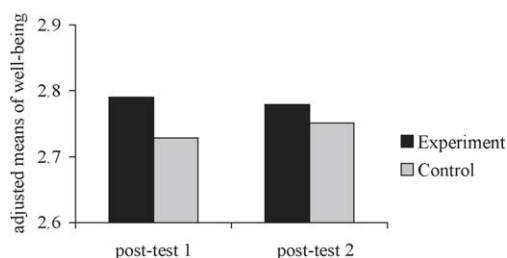


Fig. 1. Means of well-being for the experimental and the control condition at the time of the first and the second post-tests, adjusted for well-being at the pre-test.

SPF-IL into the regression equation to control for differences in SPF-IL scores between both groups at the time of the pre-test (see Table 2). As shown in Table 4, 51% of variance in post-test scores on the SPF-IL was explained by entering pre-test scores on the SPF-IL into the equation,  $\Delta F(1,163) = 168.13$ ,  $p < 0.001$ . Higher scores on the SPF-IL at the time of the pre-test also resulted in higher scores on the SPF-IL at the time of the post-test ( $\beta = 0.71$ ,  $p < 0.001$ ). Entering condition into the equation yielded a significant increase of 1% in explained variance of post-test scores on the SPF-IL,  $\Delta F(1,162) = 3.9$ ,  $p < 0.05$ . As shown in Fig. 1, participants in the experimental condition scored slightly higher on the SPF-IL at the time of the first post-test than participants in the control condition ( $\beta = 0.11$ ,  $p < 0.05$ ). Our hypothesis that the intervention would have a positive effect on overall subjective well-being was confirmed.

According to Baron and Kenny [31], three conditions have to be met in order to establish the mediation of SMA between condition and overall subjective well-being. First, the independent variable must affect the mediator, that is, there has to be an effect of condition (bibliotherapy versus control) on post-test SMA. As shown by the ANOVA with repeated measures of SMA, this first condition was met. Second, the independent variable must affect the dependent variable, that is, there has to be an effect of condition on subjective well-being. As shown by the second step of the regression analysis on the scores of the SPF-IL at the time of the first post-test, this second condition was met as well. Third, the mediator must affect the dependent variable, causing the effect of the independent variable to become smaller. To test whether this last condition could be met, post-test SMA was entered into the regression equation. This yielded a significant increase of 14% in explained variance of post-test well-being,  $\Delta F(1,161) = 65.21$ ,  $p < 0.001$ . As shown in Table 4, there was a significant main-effect of post-test SMA ( $\beta = 0.4$ ,  $p < 0.001$ ), with higher levels of post-test SMA resulting in higher levels of post-test well-being. Furthermore, the main effect of condition on overall subjective well-being decreased to a non-significant level after post-test SMA was entered into the regression equation. Our hypothesis that the effect of condition on post-test SPF was mediated by post-test SMA could be confirmed.

To test the longitudinal effects of our bibliotherapy, we did an identical hierarchical regression analysis of the SPF-

IL scores at the second post-test. However, the experimental condition did not yield a significant increase in explained variance of the SPF-IL at the time of the second post-test,  $\Delta F(1,156) = 0.34$ ,  $p = ns$ . Our hypothesis that the positive effect of the bibliotherapy on overall subjective well-being would still exist after 6 months was not confirmed.

#### 4. Discussion and conclusion

In this study, we investigated whether increasing the SMA of slightly to moderately frail older people would result in the maintenance of well-being among these persons. The bibliotherapy we designed to increase SMA proved to have significant effects: older persons who received the bibliotherapy showed an increase in SMA while those who participated in the control condition showed a decrease. This positive effect of our bibliotherapy still existed after 6 months. Furthermore, this increase in SMA resulting from bibliotherapy prevented a decrease in level of well-being. However, this effect on well-being ceased to exist after 6 months.

##### 4.1. Discussion

The current findings suggest that it is possible to provide older people with a general repertoire of cognitions and behaviours to sustain well-being. Although interventions focusing on one specific problem are efficient in dealing with age-related problems like depression or loneliness, a self-management intervention aimed at sustaining general well-being may be more suited to deal with the mixture of physical and psychosocial problems of frail older persons. As shown by our results, the theory of SSMA can provide a fruitful basis for this kind of interventions. Furthermore, our results show that an age-related decline in well-being can be counteracted, even with only slight to moderate levels of frailty. Bibliotherapy may be especially suited for this purpose, as it is an easily accessible form of treatment, which may motivate people to participate, even when they are not experiencing any serious problems yet.

Despite the promising nature of the present study, some features may limit the persuasiveness of its findings. First, even though we found significant effects of our bibliotherapy on measures of SMA, mastery and subjective well-being, the mean differences between the experimental and the control group were relatively small. Therefore, one might argue that the statistically significant effects of our bibliotherapy do not represent clinically significant findings. However, the effect sizes of our bibliotherapy are similar to those of well-accepted clinical interventions like psycho-educational training for hypertension, asthma or angina pectoris patients [32]. Furthermore, our bibliotherapy consisted of a minimal intervention that was tested in a sample of older people without any severe physical or psychosocial problems. Given these circumstances, we believe that the self-management bibliotherapy provides a promising format for future

interventions in the field. Research among older persons with health-care needs may further establish the effectiveness of our bibliotherapy in a clinical setting.

Second, the measures of outcome, the SMA-S and the SPF-IL, are relatively new instruments. Although the reliability and validity of both instruments have been extensively investigated (SMA-S [22] SPF-IL [29]), their relative novelty means that their use has not been widespread. However, we believe that their potential contribution to interventions concerned with successful aging legitimates their use in this study. With regard to the SMA-S, this instrument allowed us to attribute the positive effect of our bibliotherapy on subjective well-being to the theoretical process as described by the theory of SSMA [15]. Furthermore, the SMA-S was more sensitive in measuring the long-term effect of our bibliotherapy than the more general measure of mastery [23]. This may explain why some self-management interventions failed to detect any long-term effects [9]: perhaps the instruments used were not sensitive enough to measure the long-term effects of self-management.

A third limitation is that the effect of our bibliotherapy on subjective well-being disappeared after 6 months. Although the effect on SMA remained significant, there was some decrease compared to the effect immediately after receiving the bibliotherapy. Perhaps the bibliotherapy should refer more explicitly to its long-term applications, for example, by indicating that participants could re-read specific parts of the intervention in the face of difficulties or by including some additional exercises for future use. One of the important benefits of bibliotherapy over more traditional interventions is that the former can be re-applied at any given moment.

#### 4.2. Practice implications

With a growing elderly population and increasing cutbacks in health care, our society faces the difficult task of making all ends meet. Cheap and easily accessible interventions, like our self-management bibliotherapy, may provide a useful addition to more traditional gerontological interventions, which focus solely on the physical decline associated with aging. Although the bibliotherapy described in the current article will not restore all of the physical and psychosocial losses associated with a frail condition, it does provide an effective means of improving abilities to self-manage daily life, which may counteract a decrease in subjective well-being. Moreover, it may be an important tool in the prevention of the loss of self-management abilities: as this bibliotherapy provides an easily accessible form of treatment, it may motivate people to increase their SMA, even when they are not experiencing any serious problems yet.

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