# Promoting well-being in frail elderly people

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# 7 Effects of the SMA intervention on Self-Management Abilities and well-being

In this chapter, the effects of the SMA intervention on overall SMA, separate self-management abilities, well-being, and mastery are reported. In preliminary analyses, the population from which the patients were recruited (hospital or family practitioner's practice) modified the effects of the covariates. Analyses per population indicated that the intervention influenced self-management abilities and well-being positively in hospital patients, whereas there were no such effects in this family practitioner's sample.

In hospital patients, the intervention had both short-term and longer-term positive effects on overall SMA. There were also indications that the intervention had an effect on the separate abilities. Variety and taking initiatives were influenced most by the intervention, though most of the other abilities showed indications of increase as well. Multifunctionality was not influenced at all. The intervention increased overall well-being, both in the short term and in the longer term. In addition, there was an indication of decreased psychological distress, both in the short term and in the longer term. There were indications that the increase in well-being was caused by an increase in SMA. Most changes in SMA, overall well-being, and psychological distress could be considered clinically relevant.

Mastery was influenced less by the intervention than was overall SMA. Levels of frailty, loss-frame, and neuroticism were not related to changes in self-management abilities. Possible reasons for the absence of effects in family practitioner's patients are discussed.

# 7.1 Introduction

In this chapter, we report the effects of the SMA intervention on overall Self-Management Ability (SMA) and the separate self-management abilities, as well as on well-being. As explained in Chapter 1, well-being is of central importance for successful aging. Frail elderly people are at risk of declining well-being. We believe that the decline in well-being can be prevented or reduced by improving SMA. SMA refers to adaptive abilities to realize and sustain substantive dimensions of well-being and was, therefore, targeted in an intervention aimed at preventing or mitigating the negative effects of frailty. SMA and its abilities were derived from the theory of successful self-management of aging (SSMA theory) [1] and are described in Chapter 1. The SMA intervention aimed at increasing SMA, which, in turn, supposedly increases well-being, is described in Chapter 6.

## 7.1.1 Effects of the SMA intervention on self-management abilities

The first set of questions concerned the effects of the SMA intervention on self-management abilities. Our main research question was whether the intervention increased overall SMA in frail elderly people and whether the intervention had both short-term (directly after the intervention) and longer-term (6 months after baseline) effects. Additionally, we investigated whether the different self-management abilities could be influenced equally by the intervention, which addressed all self-management abilities together in relation to well-being. Knowledge of this could indicate whether certain abilities are easier to manipulate than others. The analyses of the separate abilities were exploratory, since the main focus was on overall SMA. Conclusions about the separate abilities are likely to be less valid, because the separate subscales were not validated and should preferably have been analyzed in a multivariate way (that is, taking into account their interrelatedness; see Chapter 2).

Another important question was whether the intervention worked differently in the two kinds of patients that were sampled in this study: hospital patients and patients from a family practitioner's practice (FP's patients).

## 7.1.2 Effects of the SMA intervention on well-being

The second set of questions concerned the effects of the SMA intervention on well-being. We investigated whether the SMA intervention increased well-being in frail elderly patients and whether the intervention had both short-term and longer-term effects on well-being. An important question again was whether the influence of the intervention on well-being was different in hospital or FP's patients. The last question about well-being was whether the increase in well-being was caused by an increase in SMA. Because SMA is directed at the realization of well-being, we expected that an increase in SMA would lead to an increase in well-being. We investigated both positive well-being (overall well-being) and negative well-being (psychological distress). As explained in Chapter 1, most research into proxies for frailty focused on the negative side of well-being. It has rarely been investigated until now what links

frailty might have to the positive dimensions of well-being. Because the absence of distress does not necessarily imply the presence of positive well-being, both dimensions were used. Moreover, the SSMA theory from which SMA was derived emphasized positive well-being as being of special importance for successful aging.

We tested the following hypotheses about the effects of the intervention:

- The SMA intervention will increase overall SMA in the short term and in the longer term.
- All self-management abilities will be increased by the intervention, because they are related and contribute to overall SMA.
- The SMA intervention will increase overall well-being and decrease psychological distress in the short term and in the longer term.
- The increase in well-being will be caused by an increase in SMA.

### 7.1.3 Effects of the SMA intervention on mastery

Because SMA is a relatively new concept, a related but better-known concept was investigated as well: mastery. Mastery is thought to be comparable to SMA, although it is a more general capacity. Through increased SMA, people may feel more in control over their lives – that is, they may have a higher sense of mastery. Contrary to SMA, mastery is not systematically linked to the substantive dimensions of well-being and we expected that it might, therefore, be less sensitive to the intervention. Therefore, we expected to find more change in SMA than in mastery. We tested the following hypotheses about mastery:

- The SMA intervention will increase mastery in the short term and in the longer term.
- The effect of the intervention on SMA will be stronger than the effect on mastery.

### 7.1.4 Possible effect modifiers

We investigated three possible modifiers of the effect of the intervention on SMA: level of frailty, loss-frame, and neuroticism. We expected that level of frailty might influence the effect of the intervention on SMA. The sample covered a large range of frailty. We investigated whether the intervention had differential effects within this range.

We thought it likely that a loss-frame may also modify the effect of the intervention. A loss-frame, in contrast to a positive frame (one of the self-management abilities), is a cognitive frame in which people focus on their losses and expect that their situation can only deteriorate. Having such a loss-frame implies that people no longer invest in the maintenance of resources [2]. We considered it possible that the intervention would have less influence on SMA when patients had a strong loss-frame, because it may be more difficult to convince them to invest in maintenance of resources. Moreover, the stronger the loss-frame, the more difficult it may be to switch to a more positive frame.

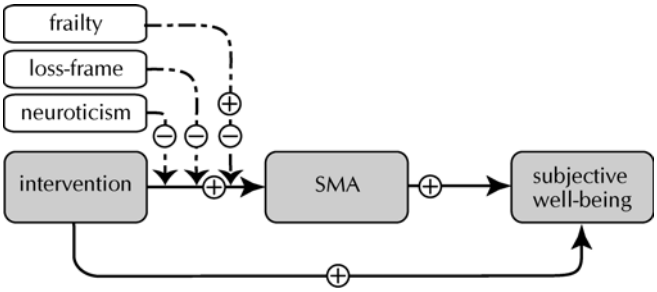


Figure 7-1. *Expected effects of the SMA intervention and possible effect modifiers*

Lastly, we thought it possible that the intervention would have less effect when patients were more neurotic. This question was based mainly on the findings of other research. For example, Pushkar, Reis, and Morros [3] found that the effect of their intervention on well-being was lower for neurotic people.

We tested the following hypotheses about the effect modifiers:

- The level of frailty will influence the effect of the intervention on SMA. It is possible that the intervention will work best for the middle range of frailty.
- In frail elderly patients with a stronger loss-frame, the intervention will have less influence on SMA than in frail elderly patients with a weaker loss-frame.
- In frail elderly patients who are more neurotic, the intervention will have less influence on SMA than in frail elderly patients who are less neurotic.

Figure 7-1 summarizes the expected effects of the SMA intervention on SMA and well-being, as well as the expected influences of the effect modifiers.

## 7.2 Method

For a description of the sample, the measurement scales, the intervention, and some general aspects of the analyses, we refer to Chapter 6.

### 7.2.1 Analysis

In preliminary analyses of the overall sample, population was found to be an important factor that modified the effects of the covariates. In addition, significant statistical interactions with main effects and covariates indicated non-uniformity of the effect estimates over the populations, which is a contra-indication for the use of an overall test [4,5] and makes the results of overall tests difficult to interpret. For these reasons, the two populations (hospital and FP's patients) were analyzed separately in secondary analyses. Because the intervention and control groups were very small when the two populations were analyzed separately, further analyses were done using non-parametric techniques.

The scores of SMA on T1 and T2 were firstly compared with the baseline scores using paired comparisons (Wilcoxon signed rank test) per condition. Then, the difference scores for SMA T1 – SMA T0 (short term), and SMA T2 – SMA T0 (longer term) were categorized into 'declined' (a negative change of more than ¼ standard deviation – a standardized effect of .25 – of the difference scores); 'improved' (a positive change of more than ¼ standard deviation); and 'equal' (in between) to test the differences more thoroughly by using a criterion for change. The effects of the intervention were investigated for hospital and FP's patients separately by comparing the percentages of improvement or decline in overall SMA and the self-management abilities between the conditions. Comparisons were made using chi-square, Fisher exact, and Kruskal-Wallis tests. Additionally, a Kolmogorov-Smirnov test was carried out on the non-categorized difference scores. The same procedure was applied to the well-being difference scores. To investigate whether an increase in well-being was caused by an increase in SMA, the categorized difference scores of both SMA and well-being were dichotomized (declined/equal versus improved). The binary variables were plotted together and tested using a one-sided Fisher exact test.

To investigate the effects on mastery, the same analyses as described above were carried out using mastery instead of SMA as the dependent variable. Spearman-rank correlations with the categorized difference scores were computed to investigate the effects of the hypothesized effect modifiers (level of frailty, loss-frame, and neuroticism) on changes in SMA.

Some measures were somewhat skewed on the baseline: people tended to score high in both self-efficacy and overall SMA; whereas people scored low in frailty and neuroticism. Because of this skewness, we expected that the intervention may yield less effect owing to ceiling effects. All preliminary analyses for SMA, separate self-management abilities, and overall well-being were carried out using the non-imputed and the 8 imputed files (see section 6.5). Because psychological distress and mastery had almost no missing values, they were analyzed only in the non-imputed file. The non-parametric analyses per population were carried out only using the non-imputed file. We used analytic techniques that are especially suited to small samples.

# 7.3 Results

## 7.3.1 Hospital patients

### Effects on overall SMA and the separate self-management abilities

The intervention group improved significantly more in overall SMA in the short term than did the control group (categorized difference scores). More patients in the control group remained the same or declined (Table 7-1 and Table 7-3). The same effect was visible in the longer term (Table 7-2), but this effect was not significant. Following a paired comparison, however, this longer-term change was significant (Wilcoxon signed rank $z$ = -1.73, $p$ = .084). Thus, both in the short term and in the longer term, the intervention seemed to increase SMA.

Concerning the separate abilities, there were indications that the intervention group did better than the control group when paired comparisons of the different measurement moments were made. Except for multifunctionality, the intervention group only increased, whilst the control group declined in almost all abilities. In the intervention group, there was a significant short-term decline in multifunctionality ($z$ = -2.49, $p$ = .013) and a significant longer-term increase in variety ($z$ = -2.11, $p$ = .035), taking initiatives ($z$ = -1.97, $p$ = .048), investment ($z$ = -1.90, $p$ = .057), and positive frame ($z$ = -1.98, $p$ = .047). In the control group, there was a significant short-term decline in variety ($z$ = -2.53, $p$ = .011) and a significant short-term and longer-term decline in multifunctionality ($z$ = -1.67, $p$ = .095 and $z$ = -2.23, $p$ = .026).

When the categorized difference scores were examined, we found indications that the intervention group improved more than the control group did in several abilities. In the short term, there was an indication of more improvements in initiative, investment, variety, and self-efficacy and an indication of more decline in multifunctionality and positive frame in the intervention group than in the control group (Table 7-1). In the longer term, there was an indication of more improvement in all but one of the abilities in the intervention group (Table 7-2). Multifunctionality was about the same for the two conditions. In the longer term, the results indicated that the intervention group improved more than the control group did in almost all self-management abilities. Only the differences between the conditions in variety (short term and longer term) reached significance when tested, however. The intervention group improved significantly more in variety in the short term and in the longer term than did the control group (Table 7-3).

These results could imply that variety was influenced the most by the intervention and that the other abilities were influenced less. The intervention also seemed to influence investment and self-efficacy, seemed to influence initiative and positive frame little, and did not influence multifunctionality at all. Multifunctionality declined in both conditions.

Table 7-1. Percentages of hospital patients who declined, remained equal, or improved in the short term

| Variable | | Intervention group | Control group | $X^2$ (p) | Kruskal-Wallis $\chi^2$ (p) | Kolmogorov-Smirnov Z (p) |
|---|---|---|---|---|---|---|
| SMA[a] | declined | 28.6 | 38.9 | **12.48 (.002)** | **5.00 (.025)** | **1.56 (.016)** |
| | equal | 4.8 | 44.4 | | | |
| | improved | 66.7 | 16.7 | | | |
| Initiative[a] | declined | 23.8 | 27.8 | .24 (.885) | .21 (.647) | .72 (.684) |
| | equal | 23.8 | 27.8 | | | |
| | improved | 52.4 | 44.4 | | | |
| Investment[a] | declined | 33.3 | 44.4 | 4.13 (.127) | 2.09 (.148) | .94 (.341) |
| | equal | 14.3 | 33.3 | | | |
| | improved | 52.4 | 22.2 | | | |
| Variety | declined | 33.3 | 50.0 | **10.69 (.005)** | **4.94 (.026)** | **1.46 (.029)** |
| | equal | 14.3 | 44.4 | | | |
| | improved | 52.4 | 5.6 | | | |
| Multi-functionality[a] | declined | 52.4 | 33.3 | 1.50 (.473) | 1.02 (.312) | .59 (.873) |
| | equal | 33.3 | 50.0 | | | |
| | improved | 14.3 | 16.7 | | | |
| Self-Efficacy | declined | 28.6 | 33.3 | 1.00 (.608) | .58 (.446) | .67 (.765) |
| | equal | 28.6 | 38.9 | | | |
| | improved | 42.9 | 27.8 | | | |
| Positive Frame | declined | 33.3 | 16.7 | 1.77 (.412) | .36 (.546) | .60 (.866) |
| | equal | 23.8 | 38.9 | | | |
| | improved | 42.9 | 44.4 | | | |
| Overall well-being[a] | declined | 21.4 | 43.8 | **6.50 (.039)** | **4.71 (.030)** | **1.56 (.015)** |
| | equal | 14.3 | 37.5 | | | |
| | improved | 64.3 | 18.8 | | | |
| Psychological distress[a] | declined | 20.0 | 22.2 | .44 (.804) | .27 (.603) | **1.35 (.052)** |
| | equal | 20.0 | 27.8 | | | |
| | improved | 60.0 | 50.0 | | | |
| Mastery[a] | declined | 52.4 | 50.0 | .45 (.799) | .12 (.734) | .40 (.998) |
| | equal | 33.3 | 27.8 | | | |
| | improved | 14.3 | 22.2 | | | |

a. Analyses were also carried out using a Fisher exact test treating the variable as binary variable (declined and equal versus improved), because more than 20% of the cells had an expected frequency of less than 5. This yielded comparable results. Fisher exact 1-sided p for SMA: .002; for initiative: .432; for investment: .054; for multifunctionality: .590; for overall well-being: .014; for psychological distress: .385; for mastery: .409.

Table 7-2. Percentages of hospital patients who declined, remained equal, or improved in the longer term

| Variable | | Intervention group | Control group | $X^2$ (p) | Kruskal-Wallis $\chi^2$ (p) | Kolmogorov-Smirnov Z (p) |
|---|---|---|---|---|---|---|
| SMA[a] | declined | 27.8 | 50.0 | 1.95 (.377) | 3.20 (.074) | .67 (.766) |
| | equal | 11.1 | 5.6 | | | |
| | improved | 61.1 | 44.4 | | | |
| Initiative[a] | declined | 27.8 | 38.9 | .52 (.773) | 1.78 (.182) | .33(1.00) |
| | equal | 5.6 | 5.6 | | | |
| | improved | 66.7 | 55.6 | | | |
| Investment[a] | declined | 22.2 | 38.9 | 1.18 (.391) | .16 (.690) | .67 (.766) |
| | equal | 5.6 | 11.1 | | | |
| | improved | 72.2 | 50.0 | | | |
| Variety | declined | 27.8 | 61.1 | **5.47 (.065)** | **5.70 (.017)** | 1.17 (.131) |
| | equal | 5.6 | 11.1 | | | |
| | improved | 66.7 | 27.8 | | | |
| Multi-functionality[a] | declined | 66.7 | 66.7 | 2.40 (.301) | .28 (.600) | .33(1.00) |
| | equal | 0.0 | 11.1 | | | |
| | improved | 33.3 | 22.2 | | | |
| Self-Efficacy | declined | 27.8 | 33.3 | 1.12 (.571) | .82 (.364) | .50 (.964) |
| | equal | 16.7 | 27.8 | | | |
| | improved | 55.6 | 38.9 | | | |
| Positive Frame | declined | 22.2 | 50.0 | 4.35 (.114) | .20 (.656) | .83 (.491) |
| | equal | 11.1 | 0.0 | | | |
| | improved | 66.7 | 50.0 | | | |
| Overall well-being[a] | declined | 20.0 | 33.3 | **5.07 (.079)** | **3.36 (.067)** | **1.46 (.028)** |
| | equal | 13.3 | 40.0 | | | |
| | improved | 66.7 | 26.7 | | | |
| Psychological distress[a] | declined | 22.2 | 38.9 | 2.80 (.247) | 2.36 (.124) | 1.00 (.270) |
| | equal | 11.1 | 22.2 | | | |
| | improved | 66.7 | 38.9 | | | |
| Mastery[a] | declined | 44.4 | 50.0 | 1.38 (.502) | .79 (.373) | .50 (.964) |
| | equal | 16.7 | 27.8 | | | |
| | improved | 38.9 | 22.2 | | | |

a. Analyses were also carried out using a Fisher exact test treating the variable as binary variable (declined and equal versus improved) because more than 20% of the cells had an expected frequency of less than 5. This yielded comparable results. Fisher exact 1-sided p for overall SMA: .253; for initiative: .367; for investment: .153; for variety: .022; for multifunctionality: .356; for self-efficacy: .253; for positive frame: .250; for overall well-being: .033; for psychological distress: .09; for mastery: .235.

Table 7-3. Partitioning of distributions with significant $X^2$ in Table 7-2 and Table 7-3

| Variable | Declined versus Equal, $X^2$ (p) | | Declined and Equal versus Improved, $X^2$ (p) | |
|---|---|---|---|---|
| SMA short term | **3.01** | **(p = .083)** | **9.85** | **(p = .002)** |
| Variety short term | .76 | (p = .383) | **9.98** | **(p = .002)** |
| Overall well-being short term | .06 | (p = .815) | **6.45** | **(p = .011)** |
| Variety longer term | .01 | (p = .944) | **5.46** | **(p = .019)** |
| Overall well-being longer term | .29 | (p = .590) | **4.82** | **(p = .028)** |

## Effects on well-being

In the intervention group, overall well-being significantly increased and psychological distress significantly decreased in both the short term and in the longer term when paired comparisons were made (overall well-being $z$ = -2.34, $p$ = .019 and $z$ = -2.22, $p$ = .027; psychological distress $z$ = -2.40, $p$ = .017 and $z$ = -2.61, $p$ = .009). In the control group, overall well-being and psychological distress remained about the same. The results of the paired comparisons were confirmed when the categorized difference scores were tested. The intervention group improved significantly more in overall well-being than did the control group, both in the short term and in the longer term (Table 7-1 to Table 7-3). For psychological distress, a similar effect was indicated, but it did not reach statistical significance (Table 7-1 and Table 7-2). Thus, both in the short term and in the longer term, the intervention appeared to increase overall well-being and to decrease psychological distress.

## Are the effects on well-being caused by SMA?

As Figure 7-2 to Figure 7-5 show, for both overall well-being and psychological distress, there were indications of simultaneous improvements and declines connected with SMA. It appeared as if an increase in well-being was related to an increase in SMA, whereas a decline (or equal score) in well-being was related to a decline (or equal score) in SMA. However, this result was significant only for short-term overall well-being.

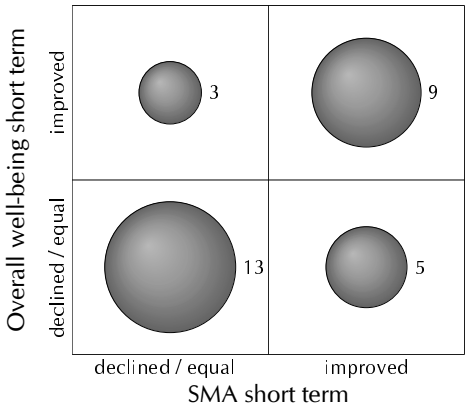


Figure 7-2. *Numbers of hospital patients who declined/remained equal or improved in SMA and overall well-being, short term. n = 30, $\chi^2$ = 6.45, Fisher exact one-sided p = .014*

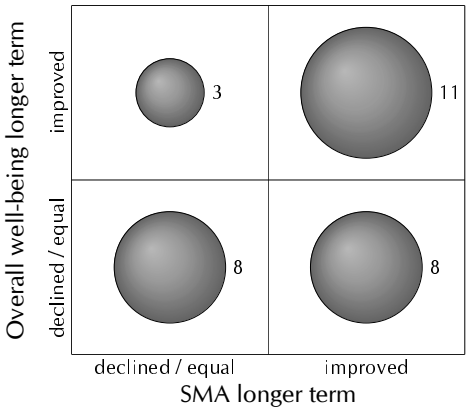


Figure 7-3. *Numbers of hospital patients who declined/remained equal or improved in SMA and overall well-being, longer term. n = 30, $\chi^2$ = 2.63, Fisher exact one-sided p = .107*

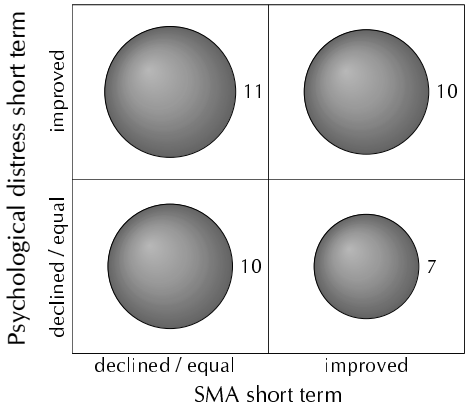


Figure 7-4. *Numbers of hospital patients who declined/remained equal or improved in SMA and psychological distress, short term. n = 38, $\chi^2$ = .16, Fisher exact one-sided p = .473*

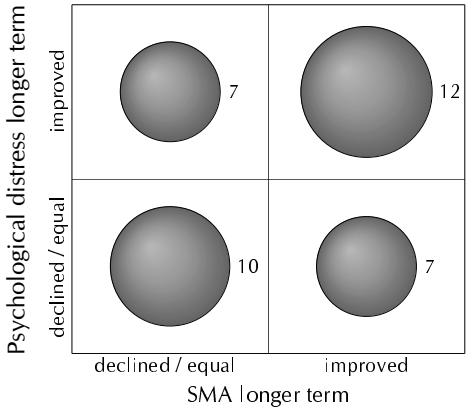


Figure 7-5. *Numbers of hospital patients who declined/remained equal or improved in SMA and psychological distress, longer term. n = 36, $\chi^2$ = 1.74, Fisher exact one-sided p = .163*

## Correlations between SMA and mastery (total sample)

At T0, T1, and T2, SMA and mastery were significantly and strongly correlated (Table 7-4). Mastery was also significantly correlated with the separate self-management abilities at T0, T1, and T2. The correlations at T1 were all smaller than those at T0. The highest correlations were at T2. The strength of the correlations shows that mastery can reasonably be used as a concept comparable to SMA.

Table 7-4. Bivariate correlations between mastery, overall SMA, and the separate Self-Management Abilities

| | Mastery | | |
|---|---|---|---|
| | T0 | T1 | T2 |
| Overall SMA | .50 ($p < .001$) | .36 ($p < .001$) | .65 ($p < .001$) |
| Initiative | .35 ($p < .001$) | .25 ($p = .012$) | .54 ($p < .001$) |
| Investment | .36 ($p < .001$) | .23 ($p = .025$) | .52 ($p < .001$) |
| Variety | .32 ($p = .001$) | .29 ($p = .004$) | .43 ($p < .001$) |
| Multifunctionality | .45 ($p < .001$) | .34 ($p = .001$) | .51 ($p < .001$) |
| Self-efficacy | .43 ($p < .001$) | .28 ($p = .006$) | .68 ($p < .001$) |
| Positive Frame | .39 ($p < .001$) | .19 ($p = .059$) | .40 ($p < .001$) |

### Changes in mastery

Changes in mastery were about the same for the two conditions in the short term (Table 7-1), whereas there was a slight indication of more improvement in the intervention group in the longer term (Table 7-2). This difference was not significant.

## 7.3.2 Modifiers of the effect of the intervention on SMA in hospital patients

Since the two populations had to be analyzed separately, we could not include the possible modifiers as covariates in the main analyses. Therefore, it was not feasible to investigate exactly if and how the possible modifiers influenced the effects of the intervention. We could only examine whether these variables related to improvement or decline in self-management abilities, to get an indication of possible effect modification.

A stronger loss-frame on the baseline was related to improvement in variety in both the short term ($r = .27$, $p = .094$) and in the longer term ($r = .35$, $p = .034$), and improvement in overall SMA in the short term ($r = .35$, $p = .028$). These relations were contrary to expectations (we expected a stronger loss-frame to relate to less improvement). Neuroticism on the baseline had a strong short-term relation to improvement in positive frame, in the expected way ($r = -.45$, $p = .005$). The more neurotic patients were, the less they improved. Frailty was not related to any of the changes in self-management abilities. There was not enough evidence to conclude that these three variables strongly modified the effects of the intervention (when added to the preliminary analyses, none of them had an effect or interacted with condition).

### 7.3.3 Clinical relevance of the changes in SMA and well-being in hospital patients

Computing effect sizes and comparing them to those found in other studies, as is often done in intervention studies, was not considered to be a good strategy because effect sizes are dependent on the variance in a sample and are, therefore, difficult to compare over studies [6,7]. Therefore, the effect size is not informative. Greenland [6] argues that use of effect sizes should be avoided always. It is better to be able to determine whether the change that was found is clinically relevant. Clinical relevance is different from effect size, because the effect size does not show how important the change over time is [8]. It is difficult to determine what a clinically relevant change is when using scales such as those used here. To get an indication of the clinical relevance of our results concerning overall SMA, overall well-being, and psychological distress, we used a characteristic of the measurement scale which was found to relate to clinical relevance in several studies: the standard error of measurement (SEM) [9-11]. The SEM depends on the reliability of the measurement scale and the variance in the baseline sample. A change of one SEM or larger was found to relate to clinical relevance [9-11]. When we used the one SEM criterion in the hospital patients, it appeared that, although the changes in SMA were small, in the longer term they may be considered clinically relevant (Table 7-5). When the most important outcome, wellbeing, was considered using the one SEM criterion, the short-term and longer-term changes in overall wellbeing that we found could be considered clinically relevant. The longer-term changes in psychological distress could be considered clinically relevant as well.

### 7.3.4 FP's patients

Neither the intervention group nor the control group changed significantly in the short term or in the longer term in overall SMA, the separate self-management abilities, overall well-being, or psychological distress (paired comparisons). The conditions changed to about the same extent in the short term (the control group improved more in psychological distress), whereas, in the longer term, the control group seemed to improve a little more than the intervention group in overall SMA and some abilities (categorized difference scores). These results indicated that there were hardly any differences between conditions or that the intervention group seemed to do a bit worse than the control group. Thus, the 'experiment' was unsuccessful for FP's patients, since there were hardly any differences between the conditions and, if there was a difference, it was in favor of the control group. Neither SMA nor well-being changed substantially between the different measurement moments. Therefore, the question whether an increase in well-being was caused by an increase in SMA did not apply to FP's patients. This difference in the two intervention groups (hospital versus FP's patients) explains why the analysis of the combined groups revealed only population as a main effect and why the two populations had to be analyzed separately.

Table 7-5. Percentages of hospital patients who declined, remained equal, or improved according to the one SEM criterion

| Variable | | Intervention group | Control group | $X^2$ (p) | |
|---|---|---|---|---|---|
| SMA, short term | declined | 23.8 | 16.7 | 3.80 | (.150) |
| | equal | 42.9 | 72.2 | | |
| | improved | 33.3 | 11.1 | | |
| SMA, longer term | declined | 11.1 | 50.0 | **7.12** | **(.028)** |
| | equal | 55.6 | 22.2 | | |
| | improved | 33.3 | 27.8 | | |
| Overall well-being, short term | declined | 0.0 | 18.8 | **13.51** | **(.001)** |
| | equal | 42.9 | 81.3 | | |
| | improved | 57.1 | 0.0 | | |
| Overall well-being, longer term | declined | 13.3 | 20.0 | **9.30** | **(.010)** |
| | equal | 20.0 | 66.7 | | |
| | improved | 66.7 | 13.3 | | |
| Psychological distress, short term | declined | 15.0 | 22.2 | 1.80 | (.407) |
| | equal | 30.0 | 44.4 | | |
| | improved | 55.0 | 33.3 | | |
| Psychological distress, longer term | declined | 5.6 | 27.8 | **5.00** | **(.082)** |
| | equal | 27.8 | 38.9 | | |
| | improved | 66.7 | 33.3 | | |

## 7.4 Conclusions and Discussion

Preliminary analyses revealed that differences between the populations were likely to conceal the effects of the intervention. For this reason, the populations were analyzed separately. The results indicate that the intervention had the expected effect on self-management abilities in hospital patients, whereas there were no clear-cut effects in FP's patients. The intervention had both short-term and (non-significant) longer-term effects on overall SMA. Hospital patients who received the intervention improved more, whereas hospital patients in the control condition declined more. These results are comparable to the results of Frieswijk et al. [12], who increased SMA in slightly to moderately frail elderly people using a bibliotherapy.

The separate self-management abilities were not influenced equally by the intervention. Variety and taking initiatives appeared to be influenced more, though most of the other abilities showed indications of improvement as well. Positive frame was stable and multifunctionality was not influenced at all by the intervention, but declined in both conditions. This implies that an ability such as taking care of variety

can be influenced more easily, whereas an ability such as positive frame is more difficult to change. Because positive frame seemed to be more trait-like than the other abilities in the way it was measured in the SMAS-30, this is not a surprising finding. In the bibliotherapy study by Frieswijk et al. [12], a comparable result concerning positive frame was found.

The SMA intervention also significantly increased overall well-being in the short term and in the longer term. Psychological distress was decreased by the intervention as well, but this decrease was not significant. In the study by Frieswijk et al. [12], it was also found that overall well-being was influenced more by the SMA intervention than was psychological distress. Our findings indicate that the intervention had the expected effect on both dimensions of well-being in hospital patients, but not in FP's patients.

The hypothesis that the increase in well-being was caused by an increase in SMA was weakly confirmed. In the hospital patients, there were clear indications that an increase in SMA was related to an increase in well-being, but this finding reached significance only for overall well-being in the short term. The small size of the hospital patients group may explain why the longer-term effect failed to reach significance.

The intervention had no effect on mastery. As expected, the effect of the intervention on SMA was stronger than that on mastery. This result was again comparable to the results of the bibliotherapy study by Frieswijk et al. [12], which increased SMA but not mastery. Lastly, the question whether level of frailty, loss-frame, or neuroticism influenced the effects of the intervention on SMA in hospital patients was difficult to answer as we could not simply include them as covariates in the main analyses. There was not enough evidence to conclude that these three variables strongly modified the effects of the intervention. Our hypotheses about the possible modification of the effect of the intervention by one of these variables, therefore, were not confirmed or disconfirmed.

An important reason why large effects seem absent in hospital patients may be a lack of power. Because the populations had to be analyzed separately, the subgroups were very small. Though we used analytic techniques especially suited to small samples, power may still have been low. This implies that the absence of significant effects may be due to Type II error. However, the changes that we found in most outcome measures can be considered clinically relevant, which is more important than a large effect size. More support is given to our results by the fact that the results are comparable to the results of Frieswijk et al. [12].

Another possible reason for non-significant effects is that the recruited sample was not completely a prognostic subgroup in which an effect on the outcome measure could be expected [13,14]. Patients were selected only on the basis of their level of frailty and not on the basis of their level of SMA, whilst the intervention focused on increasing SMA. If many of the patients already had a high level of SMA prior to the study (participants are often more advantaged than non-participants; see, e.g., 14,15), they

might not have been the right study group because of 'ceiling effects' in SMA. In hospital patients, scores for multifunctionality, positive frame, and especially self-efficacy were high on the baseline, as were scores for investment, multifunctionality, self-efficacy, and positive frame in FP's patients. Regression to the mean could then even lead to a decline in post-measurement.

The absence of effects of the intervention in FP's patients may largely be due to their motivation to participate. As we saw in Chapter 6, the refusal rate in FP's patients was only 6 percent, which is unusually low (the refusal rate in hospital patients was 39%). We believe that many FP's patients participated only because their FP asked them to. Therefore, their motivation to take part may have been mainly extrinsic ('to please the doctor') [see also, 15], and less intrinsic (because they had the feeling they could benefit from the study). As a consequence, their motivation to change may have been low or even absent. Though all FP's patients met the inclusion criteria and could, therefore, be regarded as the target population of the intervention, this was not enough to guarantee the success of the intervention. We did not anticipate motivational effects, even though it is a well-known phenomenon in intervention studies and therapy that interventions will be successful only if people are ready and willing to change [e.g., 16-20]. However, we think that, in contrast to therapy, in intervention studies, this factor is often overlooked or not taken enough into account. From our findings, we learned that it is important to take motivation into account. Though it was convenient that so many patients wanted to participate in the study because of active recruitment, it would have been better for the effects of the intervention if a larger part had refused to participate. Studies in which a large part of the possible respondents refuse apparently attract only those people who really want to benefit from the study and, therefore, yield better results [see, e.g., 14,21].

The lack of intrinsic motivation may also have been partly due to a low level of frailty in FP's patients. At the second post-measurement, about 30% of the patients had a frailty score which was lower than the cut-off score, indicating that their level of frailty was low. With a low level of frailty, patients may not feel the need to change something. We believe that the level of frailty was of relevance to the operation of the intervention, especially in FP's patients. We have indications that the intervention worked better for those patients with a frailty score of above 5. When only the FP's patients with a frailty score of above 5 were considered in the comparison, the intervention group seemed to improve more on overall SMA than did the control group.

Another reason for the absence of effects of the intervention in FP's patients may be that they came from a specific region [e.g., 22,23]. This region has a very low socioeconomic status and many people live isolated. The patients may have been unfamiliar with health promotion or psychological interventions, which could have influenced the effect of the intervention or lowered their intrinsic motivation [e.g., 24]. The intervention may not have been tailored enough to the beliefs, needs, or expectations of the FP's patients [see, e.g., 25,26]. The intervention might have had

more effect in this region if it had been more 'culturally adapted' to the common customs of the specific region (for instance, by changing some expressions or examples).

The only evidence we found to prove this was the comments of the patients and the trainers, and the low refusal rate in FP's patients. We did not measure motivation or willingness to change, nor did we systematically ask why patients took part. The cultural or regional factors were not measured either. However, we believe that these reasons are the most plausible to explain the failure of the experiment in FP's patients.

Concerning the potential to generalize the findings and how representative the patients were of the total population of moderately to severely frail elderly people, the following remark can be made. The patients in this study were recruited via several hospital settings but only one family practitioner's practice in a specific region. The restriction of sampling to certain selected settings can threaten the external validity of the research and cause difficulties in generalizing the findings [27]. The risk of selection bias is especially large in elderly people because of their large heterogeneity [28]. Therefore, the potential to generalize the findings for FP's patients is low. On the contrary, the hospital population was much more representative and our results for this group can be generalized better to moderately to severely frail elderly hospital patients in general.

Concerning our questions whether self-management abilities and well-being can be increased, we can conclude that there were indications that the intervention increased overall SMA, some separate self-management abilities, and well-being in the hospital patients in our sample. It may be possible to provide frail elderly patients with a repertoire of behaviors and cognitions to sustain well-being. Our results are comparable to those of Frieswijk et al. [12], who found similar results using bibliotherapy in slightly to moderately frail elderly people. The results found for the hospital patients in our sample are promising and seem clinically relevant.

## 7.5 References


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