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Promoting well-being in frail elderly people

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Maintaining well-being in frail elderly people: does Self-Management Ability help ?



The importance of 'self-management abilities' (SMA) in relation to frailty and dimensions of well-being was investigated in two studies among elderly people between 64 and 99 years of age. The results of both studies show a negative association between SMA and frailty; a negative association of frailty with life satisfaction, overall well-being, and negative dimensions of well-being; and a positive association of SMA with life satisfaction, psychological distress, overall well-being, and positive affect. Relations between SMA and dimensions of well-being were partly direct, and partly via frailty, that is, via neutralizing losses. Though no 'buffer effect' was found, SMA maintained its positive association with well-being, even when frailty increased. Therefore, interventions that focus on the enhancement of SMA - both to counteract frailty and to contribute to well-being - are advisable.

This Chapter is based on:

Schuurmans H, Steverink N, Slaets JPJ, Lindenberg S, Frieswijk N, Buunk BP. Maintaining well-being in frail elderly people: does Self-Management Ability help? *Submitted for publication*. 2004.

4.1 Introduction

Aging successfully seems to be important for everyone. It is generally recognized that successful aging means staying physically healthy and maintaining social and psychological well-being over the life span [1,2]. However, with increasing age, many people experience losses in different domains of functioning [3]. These losses lead to a complex mixture of separate or interacting problems, a condition often called 'frailty' [4,5]. Frailty increases the risk of adverse outcomes, such as inadequate use of health care, dependence on others, personal suffering, caregiver burden, and adverse health outcomes. Knowledge of what needs to be done to delay or prevent frailty is mainly in the physical realm, for instance, the treatment of cardiovascular risk factors [6]. In the psychosocial realm, this delaying mechanism is as yet to a great extent unclear. Adaptive mechanisms possibly delay frailty. Because the number of elderly people in society is increasing, the impact of frailty on the well-being of the population is becoming increasingly substantial. This points to an important societal problem and raises the question what can be done to counteract the negative effects of frailty on well-being.

The research into successful aging has progressed in recent years to a considerable extent, which has been made possible by the explicit attention to resources that are important for the realization and maintenance of well-being [e.g., 7-9]. Successful aging can be regarded as a way of maintaining resources for well-being, as well as dealing with the loss of resources [e.g. 8,10,11]. Two developments are of special importance here. First is the progression from the consideration of the loss of single - mostly physical - resources to the consideration of bundles of resources; not only physical, but also psychosocial resources. Much research concerned with frailty, loss of resources, successful aging, and related topics has focused on the loss of single resources, such as the consequences of chronic diseases for psychological status [12], the impact of mobility impairments on autonomy and quality of life [13], the role of vision and hearing in the functioning of elderly people [14], and the relation between subjective health status and survival [15]. This research has shown the importance of these single resources for the well-being of elderly people. However, many elderly people have multiple medical and psychological problems. Though much can be learned from considering single problems, the complexity caused by both physical and psychosocial comorbidity needs extra attention [see, e.g., 16-20].

Some researchers have investigated bundles of losses of physical and psychosocial resources rather than single resources. For instance, research by Baltes and Lang [8], and Jopp and Smith [21], dealt with 'resource-poor' elderly people, combining several resources at the same time. Frailty, as we define it here, is a further development of the idea that people may lack several resources at the same time. It is a complex mixture of losses of resources in several domains of functioning, which leads to a decline in reserve capacities to deal with stressors and causes an enlarged risk of negative outcomes when stressors occur [22]. Because the interacting nature of losses in several domains, which together enlarge the risk of adverse outcomes, is a central feature of frailty, there is no need to split up frailty into several domains (such as physical or

psychosocial frailty); it can be used as a one-dimensional concept. For example, many frail elderly people suffer not only from one or more chronic conditions, but also from the loss of mobility and a decreasing social network, leading in turn to loneliness, loss of independence, and deterioration of their physical situations. Therefore, the use of the concept of frailty, indicating a bundle of interacting losses in resources, seems a more promising approach than focusing on losses in isolated resources.

The second important step forward in the research into successful aging has been made through drawing a distinction between 'direct' resources (that is, physical and psychosocial resources such as those that are lost with frailty) and resources needed to deal with, mitigate, or even prevent loss of direct resources [e.g., 2,10,11,23-25]. For example, life-management strategies were introduced as a means of managing physical and / or psychosocial resources optimally [see, e.g., 8,21,24,25]. The distinction draws attention to the possibility that the loss of resources, which are important for the realization of well-being in old age, can be prevented or reduced by special skills or strategies, which may be called 'adaptive resources'. This distinction is important, because a focus on adaptive resources may give us guidelines for what to do to counteract the negative effects of frailty in elderly people. Some first indications have been found that mechanisms such as self-management or life-management skills - that is, adaptive resources - are important to enable older people to manage the challenges of aging [e.g., 8,24,25] and buffer the negative effects of age-related resource loss [21]. However, this has rarely been investigated in frail elderly people, thus, in elderly people with a bundle of losses. Moreover, few studies have focused on direct resources (such as physical health, social relations, or activities) and adaptive resources (such as life-management strategies or self-management abilities) together [see, e.g., 21].

Some researchers have investigated the role of adaptive resources in successful aging, without examining explicit relations to specific direct resources. The important role of adaptive strategies in life management and successful aging has been investigated and emphasized by, for instance, Baltes [3], Brandtstädter and Rothermund [11], Freund and Baltes [24], Wrosch, Heckhausen, and Lachman [26], Staudinger and Fleeson [27], and Schulz and Heckhausen [10]. These adaptive resources seem to be important for interventions aimed at improving successful aging, because they could be the focus of these interventions. However, to make these adaptive resources more concretely applicable to the realization of well-being, it is necessary to know how adaptive resources relate to the (levels of) direct resources important for well-being, especially when these resources decrease (as is the case in frailty). Few researchers have investigated this. An example is the research by Jopp and Smith [21], who looked at life-management strategies (adaptive resources) for successful aging in resource-poor people. However, substantive criteria for what constitutes 'success' in aging are still lacking. Most research into successful aging specifies successes as open behavioral processes, such as neutralizing losses and maximizing gains. This does not specify *what* losses and gains are important. Though there appears to be consensus at the empirical level that success can be defined as well-being [24-26], these criteria for success are not integrated into theoretical models. Moreover, most of the research into successful aging focused on the prevention of or coping with loss, regarding successful

aging primarily as a process of neutralizing losses [3], whereas the view that successful aging can also mean maintaining or even achieving something positive is hardly to be found [28]. Even in the face of major losses, which occur frequently with aging and frailty, there may be things that contribute to well-being in a positive sense, not just by neutralizing losses [c.f., 28-31].

A theory that provides substantive criteria for success in terms of dimensions of well-being, that emphasizes positive and sustainable aspects of well-being, and that considers direct and adaptive resources together is the 'theory of successful self-management of aging' (SSMA theory) [28]. Because this theory specifies criteria for 'success', that is, substantive dimensions of well-being [32,33], and both the direct and the adaptive resources needed to reach and maintain well-being, it may give concrete guidelines for which aspects we should target to help elderly people to age with as high a level of well-being as possible in the face of frailty. On this basis, the main aim of this study was the empirical investigation of the relations between frailty (the loss of direct resources), self-management abilities (the theoretically derived adaptive resources), and dimensions of well-being (the criteria for success). The SSMA theory [28] is described in Chapter 1. The theory predicts that a decline in well-being can be prevented or reduced by increasing Self-Management Ability (SMA). SMA refers to the adaptive resources needed to realize and sustain well-being.

4.1.1 Research questions

The first question focused on the relation between SMA and frailty. We investigated whether SMA is important to enable elderly people to delay the development of frailty. SMA was expected to help the maintenance of and prevention of losses of the direct resources necessary for realizing well-being, thus, also the resources which are lost with frailty. In this way, SMA was expected to delay or prevent the development of frailty. We expected that people with higher SMA would be less frail, because they have been able to delay the loss of resources, whereas people with lower SMA would be frailer, because they have been less able to delay the onset of frailty.

The second question concerned whether frailty is negatively related to subjective well-being. Frailty was expected to be related to lower well-being, because of the resource loss it implies. Research so far has shown that functional declines or illnesses, which are often used as proxies for the level of frailty, have a moderate negative impact on well-being. Most of this research, however, has focused on distress or depression, the negative dimensions of well-being [see, e.g., 12,34-37]. It has rarely been investigated until now to what extent frailty relates to indicators of quality of life or subjective well-being, other than distress, and how it might be related to positive dimensions of subjective well-being [e.g., 21,38,39].

The third question concerned the relation between SMA and indicators of subjective well-being, which can be regarded as a step forward compared to existing research into direct and adaptive resources. We investigated whether SMA is directly related to the subjective well-being of elderly people, or whether this relation is mediated by frailty -

via neutralizing losses, as mostly found in the literature. Thus, is SMA related to subjective well-being, because it is related to frailty and because frailty is related to subjective well-being, or do adaptive resources work not only via direct resources, but also directly? It was expected that SMA is related directly and positively to well-being, because SMA, as defined by the theory, directly contributes to the realization of well-being, not only via coping with losses.

The fourth question, which was in line with other research into adaptive resources [see, e.g., 21], concerned what is often called the possible 'buffer' or 'mitigating' function of SMA. Do frail elderly people who have a high level of SMA experience less decline of well-being than frail elderly people with low levels of SMA? That is, can SMA mitigate the negative effects of frailty on subjective well-being? In line with previous research [21], we expected that SMA would mitigate the negative relations of frailty to subjective well-being, and that SMA is related to subjective well-being, even with higher frailty. Figure 4-1 summarizes all expected relations.

As mentioned before, much research into these topics focused only on negative dimensions of well-being, such as distress. It may be questioned whether the absence of distress does imply positive well-being [40-42]. Therefore, in order to know the effects of frailty and SMA on both negative and positive dimensions of well-being, both kinds of indicators of subjective well-being were considered and compared. These insights may contribute to a better understanding of what to do in interventions for frail elderly people, and why.

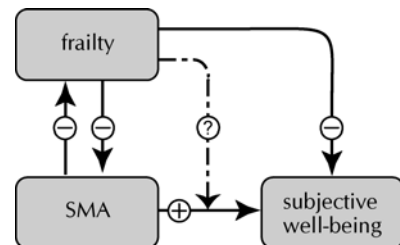


Figure 4-1. *The expected relations between frailty, SMA, and well-being*

4.2 Study 1

4.2.1 Method

Respondents

The respondents were the same as in Study 1 of Chapter 2. The sample of respondents consisted of 275 elderly persons recruited from two wards of Internal Medicine of the University Hospital Groningen (The Netherlands), from homes for the elderly, sheltered accommodation, and recreational clubs for elderly persons. The mean age was 78.4 years ($SD = 7.05$), with ages ranging from 64 to 99 years.

Measures

Basic descriptive statistics of all scales are shown in Table 4-1.

FRAILTY. Frailty was measured using the Groningen Frailty Indicator (GFI) [22,43], a short, easy-to-administer 15-item screening instrument to determine a person's level of frailty ($KR-20 = .77$). The GFI screens for the loss of resources in several domains of functioning (physical, cognitive, social, and psychological). The scores range from 0 (not frail) to 15 (severely frail).

SELF-MANAGEMENT ABILITY. SMA was measured using the Self-Management Ability Scale (SMAS-30), which is used to measure the level of Self-Management Ability (SMA), an index for 6 self-management abilities systematically linked to 5 dimensions of well-being (see Chapter 2). The scores range from 5 to 30, with a higher score indicating higher SMA.

We used several conceptions of subjective well-being in the current studies, to fully explore the relations of frailty and SMA with the whole continuum of subjective well-being. Firstly, we looked at the traditional conception of subjective well-being, which consists of cognitive (life satisfaction) and affective (positive and negative affect) dimensions. Secondly, we looked at a broader conception of well-being, which covers cognitive and affective components at the same time, and focuses on dimensions of well-being thought to be universal. In order to facilitate the comparison with the existing frailty literature, we also looked at the negative side of subjective well-being, distress. In the first study, both the cognitive dimension of well-being and the negative side of well-being were examined.

LIFE SATISFACTION. The cognitive component of subjective well-being, life satisfaction, was measured using Cantril's ladder [44]. This is a 10-point rating scale in the form of a ladder on which people have to rate where they consider themselves to be positioned between the worst imaginable life (0) and the best imaginable life (10). The ladder is a so-called self-anchoring scale, on which people define their positions on a self-defined continuum (based on their own perceptions, values, and goals).

PSYCHOLOGICAL DISTRESS. Psychological distress was measured using the 12-item version of the General Health Questionnaire (GHQ) [45]. The average score ranges from 1 to 4, with a higher score indicating more psychological distress ($\alpha = .90$).

Table 4-1. Basic descriptive statistics of all measurement scales, Study 1

Scale	Mean	Standard Deviation	Range
GFI	4.30	3.04	0 – 12
SMAS-30	22.06	3.28	12.08 – 29.78
Cantril's ladder	6.64	1.71	0 – 10
GHQ	2.05	.53	1.08 – 3.58

Analysis

To test the hypothesis that there is a negative relation between SMA and frailty, a Pearson correlation was computed. To investigate the relations of frailty and SMA - either directly or mediated by frailty - with the different conceptions of subjective well-being, we used regression analyses using the different well-being measures as the dependent variables, SMA as the predictor, and age and gender as control variables in the first step. In the second step, frailty was added as a predictor to these analyses. The scores for frailty and SMA were centered around their means to prevent negative effects of multicollinearity on the regression analyses. To test if SMA can mitigate the negative relation of frailty to well-being and to test whether SMA remains positively related to subjective well-being when frailty increases, the interaction term frailty * SMA was added to the models in the third step.

4.2.2 Results

The Pearson correlation between frailty and SMA was $-.41$ ($p < .001$, two-tailed), showing a negative relation of moderate size between SMA and frailty. The higher elderly people's SMA, the lower their frailty. The well-being measures were significantly and negatively correlated ($r = -.58$, $p < .001$) with each other.

Table 4-2 shows the beta coefficients of two separate regression models, one for each of the well-being measures as the dependent variable, with SMA as the predictor, and age and gender as control variables in step 1, and frailty added as a predictor in step 2. The associations of frailty and SMA with subjective well-being differed when we looked at different measures of well-being (step 2). Both frailty and SMA had a significant main association with life satisfaction (Cantril's ladder). The frailer people were, the less satisfied they were with their lives; the higher SMA people had, the more satisfied they were with their lives. The association of SMA with life satisfaction appeared to be partly mediated by frailty. Adding frailty as a predictor led to a decrease in the beta coefficient of SMA (compare step 1 and step 2), but SMA maintained a significant and independent association with life satisfaction. The explained variance was 37% for life satisfaction.

Both frailty and SMA had a significant main association with psychological distress (GHQ), too. The frailer people were, the more psychological distress they experienced; the higher SMA people had, the less psychological distress they experienced. The association of SMA with psychological distress was partly mediated by frailty. Adding frailty led to a decrease in the beta of SMA, but SMA kept a significant, though small, independent association with psychological distress. The explained variance for psychological distress was 29%.

Adding the interaction term frailty * SMA to these models in step 3 to test for the 'buffer function' of SMA did not lead to a change in the explained variance, as can be seen in Table 4-2. Neither for life satisfaction nor for psychological distress was there a significant interaction.

Table 4-2. Two hierarchical regression models^a predicting Life Satisfaction (Cantril's Ladder) and Psychological Distress (GHQ), Study 1

		Model 1	Model 2
		Life Satisfaction	Psychological Distress
		(n = 257)	(n = 268)
	Variable	β (p)	β (p)
Step 1	SMA	.52 (< .001)	-.33 (< .001)
	Adj. R ²	.23	.09
Step 2	Frailty	-.43 (< .001)	.49 (< .001)
	SMA	.33 (< .001)	-.13 (.038)
	Adj. R ²	.37	.29
	R ² changed	.15	.20
	Sig. F Change	< .001	< .001
Step 3	Frailty	-.43 (< .001)	.49 (< .001)
	SMA	.34 (< .001)	-.12 (.052)
	Frailty*SMA	-.03 (.592)	-.06 (.290)
	Adj. R ²	.37	.29
	R ² changed	.00	.00
	Sig. F change	.592	.290

a. All analyses controlled for age and gender.

4.2.3 Discussion Study 1

Most of the expected relations were found in the first study. People with higher SMA tend to be less frail than people with lower SMA. Moreover, SMA is related positively to life satisfaction and negatively to psychological distress, whereas frailty is related negatively to life satisfaction and positively to psychological distress. SMA is both directly and indirectly (via frailty) related to life satisfaction and psychological distress. A 'buffer effect' of SMA for the negative relation of frailty to well-being was not found. However, the absence of a significant interaction showed that SMA continued to relate positively to life satisfaction even with increasing frailty. Because of the cross-sectional nature of the data, the results should be interpreted with caution and do not prove causality.

Although the first study showed promising results, there were several limitations which made a second study necessary. The first limitation was the small size and selective nature of the sample in Study 1. To be able to generalize from the findings, the results need to be robust in a larger and more a-select sample. Therefore, a second study was carried out using a large random community sample. Another limitation of the first study concerned the measures used for subjective well-being. To be able to judge the positive dimensions of subjective well-being, measures of positive aspects need to be included. In Study 1, only life satisfaction could be regarded as a more or less positive aspect of subjective well-being. However, life satisfaction ranges from negative to positive. Therefore, a measure completely positioned at the positive side of the well-being continuum, namely, positive affect, was included in the second study. In addition, Study 1 lacked a measure that integrates the affective and cognitive components of subjective well-being into one measure. In the second study, such an integrated measure of 'overall subjective well-being' was used.

4.3 Study 2

4.3.1 Method

Respondents

The respondents were the same as in Study 2 of Chapter 2. The sample¹ consisted of 1,338 community-dwelling elderly persons aged 65 years and older, randomly drawn from the registers of six municipalities in the north of the Netherlands. Many reasons for non-response were physical, which may have caused an under-representation of severely frail respondents. The average age was 74.2 ($SD = 6.59$), the oldest respondent being 98 years old.

There seemed to be several notable differences between the samples of Study 1 and Study 2. The respondents in Study 1 were slightly older and on average slightly frailer than the respondents in Study 2. In Study 1, more respondents were female, without a partner, living alone, and widowed, and fewer respondents lived independently. The difference in frailty was significant ($t(333) = 7.72, p < .001$, two-tailed) and could be expected because of the sampling methods. The level of self-management ability was comparable over the two studies.

1. The questionnaire that the respondents received had four versions, which partly contained different measurement scales. Therefore, the numbers of respondents in the analyses are different for the different measurement scales.

Measures

Basic descriptive statistics of all scales are shown in Table 4-3. To measure frailty and SMA, the same instruments were used as in the first study, namely, GFI ($KR-20 = .71$) and SMAS-30 ($\alpha = .83$). Several measures were used to operationalize subjective well-being, most of which are found frequently in the literature. They included measures for both the cognitive and the affective components of well-being, separate or integrated into one overall well-being measure.

LIFE SATISFACTION. The cognitive component of subjective well-being, life satisfaction, was measured using the Satisfaction with Life Scale (SWLS) [46,47]. This is a 5-item scale which is used to measure life satisfaction as a cognitive-judgmental process ($\alpha = .85$). It allows subjects to rate their satisfaction with life as a whole, using their own criteria [48]. The average sum score ranges from 1 to 5, with a higher score indicating more satisfaction with life.

POSITIVE AND NEGATIVE AFFECT. The affective components of subjective well-being were measured using the Positive Affect Negative Affect Scale (PANAS), a 20-item scale [49]. The PA ($\alpha = .82$) consists of 10 items for measuring positive affect, and the NA ($\alpha = .85$) consists of 10 items for measuring negative affect. The average sum scores on both subscales range from 1 to 5, with a higher score indicating more positive and more negative affect, respectively.

OVERALL SUBJECTIVE WELL-BEING. Overall subjective well-being was measured using the SPF-IL (Social Production Function Instrument for the Level of well-being), the 15-item version (SPF-IL(s)) [50]. This scale integrates both affective and cognitive components of well-being and is used to measure people's levels of physical and social well-being ($\alpha = .84$). The average sum score ranges from 1 to 4, with a higher score indicating a higher level of well-being.

Table 4-3. Basic descriptive statistics of all measurement scales, Study 2

Scale	Mean	Standard Deviation	Range
GFI	2.76	2.41	0 – 13
SMAS-30	20.65	3.01	5.83 – 28.90
SWLS	3.82	.74	1 – 5
PA	3.30	.52	1.30 – 4.80
NA	2.27	.55	1.00 – 4.20
SPF-IL(s)	2.72	.43	1.20 – 3.93

Analysis

To answer the research questions, similar analyses to those used in Study 1 were used.

4.3.2 Results

The Pearson correlation between frailty and SMA was $-.43$ ($p < .001$, two-tailed), showing a negative relation between SMA and frailty comparable to that found in Study 1.

Table 4-4 shows the correlations between the different well-being measures. There were significant correlations between all measures, except between positive affect and negative affect. This independence of positive and negative affect has often been found before [e.g., 40-42].

Table 4-4. Bivariate correlations (p) between the different indicators of well-being, Study 2

	Positive Affect	Negative Affect	Overall Well-being
Satisfaction with Life	.32 ($< .001$)	-.39 ($< .001$)	.56 ($< .001$)
Positive Affect	-	-.09 (.091)	.57 ($< .001$)
Negative Affect	-	-	-.36 ($< .001$)

Table 4-5 shows the beta coefficients of four separate regression models, one for each of the well-being measures as the dependent variable, with SMA as the predictor, and age and gender as control variables in step 1, and frailty added as a predictor in step 2. The association of frailty and SMA with subjective well-being differed when we looked at the different well-being measures. Both frailty and SMA had a significant main association with life satisfaction (SWLS). The frailer people were, the less satisfied they were with their lives; the higher SMA people had, the more satisfied they were with their lives. The association of SMA with life satisfaction was partly mediated by frailty, which can be seen when the beta coefficients for SMA in step 1 and step 2 are compared. Though its beta decreased when frailty was added as a predictor, SMA maintained a significant association with satisfaction with life. The explained variance for life satisfaction was 33%.

Positive affect (PA) had a significant main association with SMA only. The higher SMA people had, the more positive affect they experienced. The association of SMA with positive affect was not mediated by frailty, because frailty did not have a significant association with positive affect. Explained variance for positive affect was 43%. Negative affect (NA) had a significant main association with frailty only. The frailer people were, the more negative affect they experienced. The association of SMA with negative affect was almost completely mediated by frailty, as can be seen when step 1 and step 2 are compared. The beta coefficient for SMA was small and no longer significant when frailty was added to the analyses. The explained variance was 19% for negative affect.

Both frailty and SMA had a significant main association with overall subjective well-being, which combines the affective and the cognitive components of well-being (SPF-IL(s)). SMA had a positive association with overall well-being, whereas frailty had a negative association with overall well-being. The relation of SMA to overall well-being

Table 4-5. Four hierarchical regression models^a predicting Life Satisfaction (SLWS), Positive Affect (PA), Negative Affect (NA), and Overall Well-being (SPF-IL(s)), Study 2

		Model 1	Model 2	Model 3	Model 4
		Life Satisfaction (n = 1292)	Positive Affect (n = 416)	Negative Affect (n = 405)	Overall Well-being (n = 812)
Variable		β (p)	β (p)	β (p)	β (p)
Step 1	SMA	.45 (< .001)	.64 (< .001)	-.25 (< .001)	.74 (< .001)
	Adj. R ²	.20	.43	.07	.53
Step 2	Frailty	-.42 (< .001)	-.04 (.425)	.43 (< .001)	-.25 (< .001)
	SMA	.29 (< .001)	.63 (< .001)	-.08 (.151)	.64 (< .001)
	Adj. R ²	.33	.43	.19	.58
	R ² changed	.13	.00	.12	.05
	Sig. F Change	< .001	.425	< .001	< .001
Step 3	Frailty	-.41 (< .001)	-.03 (.604)	.45 (< .001)	-.26 (< .001)
	SMA	.28 (< .001)	.62 (< .001)	-.09 (.096)	.65 (< .001)
	Frailty*SMA	.03 (.287)	.03 (.440)	.07 (.218)	-.05 (.052)
	Adj. R ²	.33	.43	.19	.58
	R ² changed	.00	.00	.00	.00
	Sig. F change	.287	.440	.218	.052

a. All analyses controlled for age and gender.

was partly mediated by frailty. Adding frailty in step 2 resulted in a decrease in the beta coefficient of SMA, but SMA still had a large, significant association with overall well-being. The explained variance for overall well-being was 58%.

The addition of the interaction term frailty * SMA to all above models in step 3 did not change the explained variances significantly, as can be seen in Table 4-5. For none of the well-being measures was there a significant interaction between frailty and SMA. Only for overall well-being (SPF-IL(s)) did the interaction frailty * SMA approach significance. However, because the effect was very small, it can be considered negligible.

4.3.3 Discussion Study 2

In Study 2, in which a larger, random community sample and different well-being measures were used, the same results were found as in Study 1. People with high SMA are less frail than people with low SMA. The associations of SMA and frailty with well-being in Study 2 again turned out to be different when different conceptions of well-being were considered. Negative affect was associated only with frailty; positive affect

only with SMA; and life satisfaction and overall well-being with both frailty and SMA. The association of SMA with life satisfaction and overall well-being was both direct and indirect, via frailty. The association of SMA with positive affect was only direct, whereas its association with negative affect was completely indirect, via its relation to frailty. These different associations for the different conceptions of subjective well-being show that how subjective well-being is conceptualized and measured is of great importance.

As in Study 1, no interaction between frailty and SMA was found, suggesting that SMA does not buffer the negative association between frailty and well-being. However, SMA continued to relate positively to life satisfaction, positive affect, and overall well-being, even with increasing frailty.

As in Study 1, all results should be interpreted with caution and do not prove causality because of the cross-sectional nature of the data.

4.4 Overall Discussion

The two studies reported here were guided by four questions. Does SMA delay the development of frailty in elderly people? Is frailty negatively related to subjective well-being? Is SMA positively related to subjective well-being, either directly or via its relation to frailty? Can SMA 'buffer' or mitigate the negative relation of frailty to subjective well-being, and does SMA remain positively related to well-being when frailty increases?

In both studies, a negative association was found between SMA and frailty, indicating that people with higher SMA tend to be less frail than people with lower SMA. Therefore, it seems likely that SMA can delay the development of frailty, because it helps people to manage the loss of direct resources. In turn, it is arguable that low frailty may lead to higher SMA, so the relation between them is most probably reciprocal. Because of the cross-sectional nature of the data, we were not able to prove the causality of this relation. Longitudinal research is needed to test the delaying effect of SMA on frailty.

The results of the studies robustly showed that both frailty and SMA are substantially related to well-being in the expected way. That is, the loss of direct resources (frailty) is related to a lower level of some aspects of subjective well-being, whereas the adaptive resources (SMA) are related to a higher level of well-being. These relations seem to be additive. The relation of SMA to life satisfaction, psychological distress, and overall well-being is both direct and indirect; that is, SMA is related directly to these indicators of subjective well-being, but also indirectly via its relation to frailty. The relation of SMA to negative affect is only indirect; that is, only because of its relation to frailty. Lastly, the relation of SMA to positive affect is completely direct; that is, it is not influenced by the relation of SMA to frailty. Thus, direct resources (frailty) and adaptive

resources (SMA) relate differently to indicators of subjective well-being. Moreover, the relations of adaptive resources to well-being are not necessarily via their influence on direct resources, but are also direct - that is, adaptive resources are related independently to several indicators of subjective well-being. A 'buffer' or mitigating effect of SMA was not confirmed, but the positive associations of SMA with aspects of subjective well-being continued when frailty increased. Again, all these findings should be interpreted with caution, and causality was not proved because of the cross-sectional nature of the data.

An important result of our studies concerns the differential relations with the different conceptions of subjective well-being. They show that it is of great importance how subjective well-being is conceptualized and measured. Differential relations with different dimensions of well-being have been found before [see, e.g., 42,51-54]. Both kinds of resources have different associations with indicators of subjective well-being. Frailty has a negative association with all conceptions of well-being, except with positive affect. SMA, on the contrary, has associations with positive dimensions of subjective well-being, such as positive affect, life satisfaction, and the integrated measure of well-being (overall well-being), but not with negative affect, and only weakly with psychological distress. The relation of SMA to subjective well-being is apparently underestimated when only the negative sides of well-being are considered. When the purpose is to specify the direct positive influence of SMA, more positive conceptions should be used. The relation of SMA to these positive conceptions of well-being is also shown by the high correlation between SMA and positive affect, and between SMA and overall well-being.

Not only are the results we have found robust over two studies, but the explained variances of the different well-being measures are moderate to large, and high compared to those found in related research. For instance, Jopp and Smith [21] found an explained variance of 16% for aging satisfaction with resources, life-management strategies, and age as predictors. In our studies, the percentages of explained variance in well-being ranged from 19% to 58%. The finding of such high explained variances makes us confident that both the measurements and the investigated associations were reasonably valid. The explained variance was highest for overall subjective well-being, then for positive affect, followed by life satisfaction, psychological distress, and negative affect.

Though no 'buffer effect' was found, the results of both studies show that SMA maintains its positive association with subjective well-being when frailty increases and that SMA has a direct positive association with subjective well-being. The practical implications of these studies, therefore, seem to be clear. If SMA seems to delay the development of frailty and is positively related to subjective well-being, even when people become frailer, interventions to counteract frailty and to contribute to well-being should focus on increasing SMA. Thus, the distinction between direct and adaptive resources gives us good guidelines for where to focus interventions for frail

elderly people. These preventive effects of SMA have been tested in two intervention studies. The results are promising and show that increasing SMA leads to higher overall well-being or the prevention of a decline in overall well-being [see 55 and Chapter 7].

Although the findings presented here are promising, there are some limitations to these studies, which imply that the results should be interpreted with caution. One limitation concerns the composition of the samples and some non-response bias that may have occurred. In the sample of the second study, the largest sample, few people were very frail, which implies that the results of Study 2 do not automatically apply to very frail older people. It is possible that the frailest people did not return the questionnaire. Further research should focus on SMA and well-being in very frail older people. However, because the results are striking for relatively less frail people, and because the positive association of SMA with subjective well-being did not diminish with increasing frailty, it may be expected that the results for people who are even frailer would be as strong and that an SMA intervention may be useful even in this group.

The second limitation may be that three of the used measurement scales (GFI, SMAS-30, and SPF-IL(s)), although extensively tested, are relatively new. Both GFI and SMAS-30 were developed and tested for older people in our research group, and papers reporting the results are in progress (see also Chapter 2). Although the SPF-IL(s) has been tested extensively [50], it has not been tested specifically in an older population. The third limitation concerns the cross-sectional nature of the research. Longitudinal research is needed to test the hypothesized causality of the relations between the concepts and to investigate how these relations work out in the long term. However, even the cross-sectional data presented provide us with valuable clues to the importance of SMA for delaying the development of frailty and the maintenance of subjective well-being in elderly people.

4.5 References

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