Promoting well-being in frail elderly people

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1 *Problem definition and theoretical framework*

1.1 How to promote successful aging in frail elderly people?

1.1.1 Age, aging, and frailty

Many older people experience age-related losses of 'resources' in different domains of functioning, such as loss of mobility, vision, cognitive abilities, or people in their social networks. These losses lead to a complex mixture of separate or interacting problems, for instance, problems with mobility and loss of the partner, which result in social isolation, or several chronic conditions which cause low physical fitness and a depressed mood. Such problems increase the risk of adverse outcomes, such as unsuccessful aging, inadequate use of health care, hospitalization, institutionalization, death, decrease in social activities, dependence on others, caregiver burden, lower levels of well-being, and adverse health outcomes [1,2]. Because the number of elderly people in Dutch society is increasing, an increasingly large part of the elderly population is at risk of these adverse outcomes. Moreover, many of these adverse outcomes imply large costs to society.

Aging here does not mean an increasing chronological age, but a process of loss in different domains of functioning, a higher risk of chronic disease, a higher mortality risk, and the like. This process is not necessarily related to a person's chronological age. Chronological age is a proxy for various adverse processes. This view of aging as an increased risk of adverse outcomes due to losses in different domains of functioning is related to a concept called 'frailty' [3,4]. Although the concept of frailty is recognized as describing older people with several coexisting problems, it is a difficult concept because little consensus exists about its definition. Several definitions of frailty have been offered during the last decades [see, e.g., 1,2,4-7], ranging from a diminished ability to carry out important practical and social activities of daily life to the concept of 'synmorphosis', which focuses on how body structures together adjust to different levels of energy flow in an organism [8]. Despite many differences, one central feature can be identified in all these definitions, namely, that frailty means an unstable equilibrium and a mixture of interacting problems in several domains of functioning. It is a comprehensive concept and refers not only to physical, but also to social and psychological resources. According to our definition, frailty can be seen as having lost resources in physical, social, and psychological domains of functioning, which leads to a declining reserve capacity for dealing with stressors. As a consequence, when a stressor occurs, the chances are high that it will have negative consequences, because there is no, or too little, reserve capacity to cope with or compensate for the stressor. Frailty increases to the extent that this reserve capacity decreases or is lost.

Chronological age can be seen as a proxy for frailty. Older people tend to develop age-related chronic conditions that interact and contribute to frailty [3]. As such, there is a significant but moderate relationship between age and frailty in the elderly population. However, in a clinical sample or in a sample of people selected by their level of frailty, the relationship between age and frailty almost disappears. The reserve capacity or abundance of resources that people have in several domains of functioning is likely to

decrease with increasing age, as a result of aging; that is, as a result of the loss of resources and functions. However, this process is not the same for all older people. At greater age, the differences between people in health and health-related conditions increase. This indicates that chronological age alone does not tell us the whole story. It does not suffice to identify the group of elderly people most at risk of adverse outcomes simply by their chronological age. It seems to make more sense to identify people by their level of aging-related losses, or by frailty as an indication of loss of reserve capacity and an increased risk of adverse outcomes. In this study, the concept of frailty was, therefore, used to identify those elderly people who might be at high risk of adverse outcomes. The focus was on an important adverse outcome: unsuccessful aging. Another adverse outcome, inadequate use of health care, was considered too, but only in an exploratory way.

1.1.2 Unsuccessful aging and inadequate use of health care

Frail elderly persons are at risk of unsuccessful aging, that is, a decline in well-being. According to the theory developed by Steverink, Lindenberg, and Ormel [9], realizing and sustaining subjective well-being is seen as the main criterion for successful aging. Unsuccessful aging, therefore, means aging with a decline in well-being. Kahn [10] recently stated that successful aging means 'aging well', or aging with a high quality of life. Smith and others [11] mentioned that a positive sense of well-being is a general indicator of successful aging and adaptation. Von Faber and her colleagues [12] have shown that elderly people themselves also regard well-being as an important criterion for successful aging. That is, they regard well-being as equivalent to successful aging. Successful aging is seen as a process of adaptation, in which acceptance and adaptation are essential to maintain well-being in the face of decreases in functioning. A focus on gains instead of on losses is of crucial importance. Strawbridge, Wallhagen, and Cohen [13] found that self-rated successful aging had a strong relationship with several measures of subjective well-being, which might be an indication that people regard well-being as being of central importance for their successful aging.

In addition to a risk of declining well-being, frail elderly people often make inadequate (i.e., too much or too little) use of health care, and have a diminished ability to maintain an autonomous lifestyle [see, e.g., 1,2,6,14-20]. They have an increased risk of morbidity, mortality, and functional deterioration, which leads to repeated hospitalization and institutionalization, and a decrease in social activities [1]. Frailty also has an interplay with dependence and disability [8].

The adverse outcomes indicated by frailty raise the question of what can be done to promote successful aging (that is, well-being) in frail elderly people. This was the main question of the current study. Two general approaches can be followed. The first approach is to provide frail elderly people with extra resources (e.g., giving more care) to replace the lost resources. The second approach is to call upon people's own capacity for compensating for these losses and for preventing further losses. This is in line with the increasing emphasis on promoting a more active role of people in the process of successful aging [see, e.g., 21], in counteracting the development and

negative outcomes of frailty [see, e.g., 8], and in managing their own health [22]. Therefore, interventions for frail elderly people to promote successful aging (well-being) or mitigate the negative outcomes of frailty should focus on increasing people's own capacity. In this study, we searched for existing interventions that are suitable for tackling the problems indicated by frailty.

1.2 Suitable existing interventions

1.2.1 What should the intervention focus on?

Suitable interventions to counteract the negative outcomes of frailty should focus on investing in people's own capacity for realizing well-being (as the main criterion for successful aging). To invest in this capacity, it is important to focus on proactive processes, such as adaptive strategies, life-management strategies, and self-management, and on gains instead of only on losses. Several theories of life-span development and aging stress that aging successfully also depends on how individuals actively manage their own process of aging. There are several theories and models of life-management or self-regulatory processes with respect to social and psychological successful aging, such as the model of Selective Optimization with Compensation [23], selection and compensation via primary and secondary control [24], goal pursuit and goal adjustment [25], and socioemotional selectivity [26]. Such theories might yield suitable interventions. However, few of these models or theories have been translated into interventions. Therefore, we examined existing interventions that were not related to these self-regulatory or life-management models.

1.2.2 Existing interventions

Some studies have recently shown that 'self-management' education in the health-related domain can enable older adults to better manage their health problems, can enhance their functioning, can improve their health behavior and health status, can optimize their health care utilization, and can diminish their emotional distress [e.g., 27]. However, these existing 'self-management' and other intervention programs seem to have several shortcomings with respect to the problems that need to be addressed. A first shortcoming is that programs that are designed for elderly people focus mostly on one specific health problem, for example, arthritis [e.g., 28], and not on frailty, that is, on complex and interacting problems in several domains of functioning. As studies of 'comprehensive geriatric assessment' also show, many aged persons have a mix of problems, which makes them frail and impairs their functioning in various domains of life [29-32]. Therefore, they need an intervention that focuses not on one particular health problem but on this mix of problems.

However, even the interventions that focus on coexisting health problems are mostly concerned with coping with symptoms and diseases, or delivering more care. This is a second shortcoming of existing interventions. Intervention programs for frail elderly

people consist mainly of 'comprehensive geriatric assessment' [e.g., 29-32], which in general cannot even be called 'interventions' because they provide only assessment and recommendations. Other interventions for frail elderly people are so-called post-discharge interventions [29]. These interventions focus mainly on providing more care. Though not all had positive outcomes [29], in most of these intervention studies, it was found that their outcomes (such as independence, quality of life, well-being, autonomy, and functional decline) were influenced positively [33-36]. Interventions with intensive evaluation and management of problems by several disciplines over a long period of time were the most effective. Most interventions led to increased use of medical care (which, however, could be a good result as well, because more use could mean more adequate use). Despite the positive outcomes, these interventions are not suitable for tackling our problems. They all focus on providing extra resources to people, instead of addressing people's own adaptive abilities, which we believe is necessary because these abilities are the most conducive to successful aging.

A focus on active strategies to prevent the loss of resources necessary to realize well-being and to improve the resources that are left – that is, investing in adaptive abilities – is not present in many existing interventions. Most interventions focus on neutralizing losses. For instance, problem-solving skills could involve proactivity and investment behavior, but are restricted in most interventions to coping with problems and are not applied to investing in adaptive abilities [22,32,37-39]. Lastly, many interventions focus mainly on cognitive strategies (such as cognitive coping) and pay little attention to active behavioral strategies. However, cognitive strategies are not always the most adaptive [40], especially not when people resign themselves to their problems when they could actually do something about it. Cognitive strategies, such as acceptance, have even been found to be related to depressive symptoms in elderly people [41]. Though cognitive and active behavioral strategies are linked, and cognitive processes can be seen as a precondition for active strategies, it may be better if interventions do not focus only on the cognitive strategies.

A third shortcoming of existing interventions is that most focus only on physical, health-related issues. Most interventions do not target abilities to realize physical, social, *and* psychological *well-being* – the core ingredients of successful aging. For example, some interventions stress the importance of proactivity, but focus only on physical well-being and not explicitly on social well-being [see, e.g., 32,42,43]. Many interventions aimed at enhancing quality of life, feelings of competence, control, life satisfaction, autonomy, promoting successful aging, well-being, and related concepts have these outcomes only as secondary aims or outcomes and do not focus on these outcomes directly or as the primary aim [see, e.g., 27,32,35,42-51]. Few interventions have outcomes such as quality of life as their main focus [see, e.g., 27].

A fourth shortcoming of existing interventions is that it is often unknown how exactly they work. A clear theoretical basis for the working mechanism and a good evaluation of it are often lacking. Interventions show positive effects, but an explanation of how they bring about these effects is frequently lacking or unclear. Most researchers

evaluate an intervention only in terms of outcomes and not in terms of working mechanisms. It is often unclear how outcomes are linked by theory to the problem and the underlying mechanisms [28].

In conclusion, existing interventions seem to have four shortcomings that make them unsuitable to counteract the negative outcomes of frailty: 1) many interventions do not focus on *elderly* people who are *frail*; thus, who suffer from a mix of complex and interacting problems; 2) most interventions do not focus on preventive proactivity and on investing in adaptive abilities to realize well-being, but on providing more care or on coping with losses; 3) most interventions focus mainly on health and health-related domains, but pay little attention to social and psychological well-being directly; and 4) many interventions do not have a clear theoretical basis for their working mechanisms and outcomes, or do not describe this basis explicitly, therefore remaining a 'black box'.

Given these shortcomings of existing interventions, designing a new intervention was thought to be the best way to tackle our problem. Our aim was to design a new intervention for elderly people with a mix of problems (frail elderly people). In addition, the intervention was to focus on proactive processes, addressing adaptive abilities to realize physical and social well-being. It was intended that well-being be the ultimate outcome. Moreover, our approach to both the intervention and its evaluation was theory-based to enable us to understand and evaluate the working mechanisms and outcomes. To design such an intervention, we needed a theory that would give indications of what the intervention should target. It needed to be a theory that explains which proactive processes should be addressed to improve frail elderly people's adaptive abilities to realize well-being. A suitable theory for this purpose seemed to be the theory of successful self-management of aging (SSMA theory), developed by Steverink, Lindenberg, and Slaets [40].

1.3 A new intervention

1.3.1 The SSMA theory

The SSMA theory builds on a theory of successful aging [9], which, in turn, is based on Social Production Function theory (SPF theory) [52], a theory about how people realize and maintain well-being. According to these theories, realizing and sustaining well-being over the life-span is the main criterion for successful aging. SPF theory has as its central assumption that all individuals strive to improve their overall psychological well-being by realizing physical and social well-being (universal goals) [52,53]. Physical and social well-being can be achieved by realizing five substantive lower-order goals or dimensions of well-being: comfort and stimulation for physical well-being, and affection, behavioral confirmation, and status for social well-being. For

instance, when individuals realize comfort and stimulation, this contributes to their physical well-being, which in turn contributes to their overall well-being. These five goals are realized by using resources such as activities, endowments, or skills, and their realization makes up the criterion for 'success' in successful aging.

The SSMA theory specifies how people can realize and sustain well-being during aging. The theory postulates two kinds of resources necessary to realize well-being: *direct resources* (for instance, hobbies to realize stimulation or a close friend to realize affection) and *adaptive resources*, that is, *self-management abilities*. The latter resources are thought to be especially important for aging with high well-being, because they are needed to gain and sustain direct resources, to minimize or prevent the decline of direct resources, and to mitigate the consequences of losses of direct resources. As such, they may be of much relevance to frail elderly people, who are confronted with many losses in direct resources and, therefore, at risk of declining well-being.

Six self-management abilities are elaborated in the theory, which are thought to be the core abilities necessary to sustain well-being during the life-span:

- *Multifunctionality* of resources to realize well-being (they enable realization of various goals simultaneously and thus create synergetic effects);
- *Variety* in resources to realize well-being (such that one has more than one resource to realize a specific dimension of well-being and such that one can substitute or compensate for lost resources);
- Having a *positive frame of mind* or perspective regarding expectations for the future (one also expects maintenance or growth of resources, instead of only further loss);
- *Investment* behavior (to maintain and achieve possible growth of resources, with the aim of sustaining well-being in the longer term);
- *Self-efficacy beliefs* (beliefs in one's competence to realize well-being);
- *Taking initiatives* or being proactive (with regard to realizing well-being).

Because well-being is achieved through realization of the five substantive goals, it is necessary to see every ability explicitly in the light of each of these goals. In the SSMA theory, the self-management abilities are systematically directed towards the five goals of well-being, the realization of which is the criterion for successful aging [9,52]. Examples are taking the initiative not just with regard to comfort, but also with regard to stimulation, status, behavioral confirmation, and affection. Only when the abilities are directed at each of the substantive dimensions of well-being do they contribute to successful self-management of aging. The systematic direction of the abilities to the dimensions of well-being makes it possible to derive concrete guidelines regarding how to improve successful aging and furnishes concrete criteria of success.

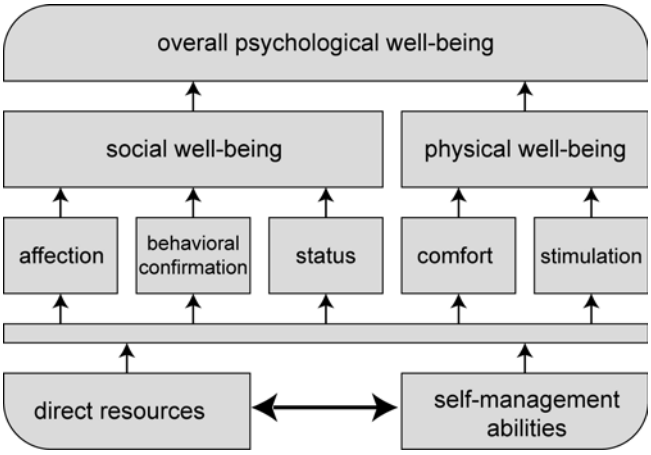

Figure 1-1. *Summary of the SSMA theory*

The self-management abilities are interdependent and often mutually reinforcing. For instance, having a positive frame of mind might lead to investment in resources, and investment in resources might in turn lead to having a variety of resources. For this reason, the self-management abilities contribute jointly to well-being. The six self-management abilities together constitute the overall concept of SMA (Self-Management Ability). Figure 1-1 summarizes the SSMA theory.

Both direct resources and self-management abilities are thought to be threatened by aging (evidence for most of this decline has been found in the literature, as shown in the work of Steverink, Lindenberg, and Slaets [40]) and even more so by frailty [54]. Direct resources decrease because of losses related to aging, such as the loss of social roles, the loss of people in the network, and the loss of physical energy. Self-management abilities decrease as a consequence of the loss of direct resources. Declining physical faculties, decreasing participation in different roles, increasing experience of loss and failure, declining positive expectations regarding the future, and increasing dependence on others lead to a decline in self-management abilities. The more people age and the frailer they become, the more difficult it is for them to maintain these self-management abilities – that is, the more difficult it is for them to be good 'self-managers'. However, these self-management abilities are the resources needed to adequately manage the remaining direct resources. They help aging people to maintain well-being, by mitigating future losses and by even improving certain resources for well-being. The explicit distinction between direct resources and adaptive resources is important to define the target of interventions aimed at promoting successful aging [40]. These self-management abilities were, therefore, the target of our intervention aimed at promoting successful aging in frail elderly people.

1.3.2 An intervention to increase SMA in frail elderly people

We believe that increasing the SMA of frail elderly people by means of an intervention can reduce the risk of declining well-being and may influence the use of care. The SSMA theory clearly shows which abilities and dimensions of well-being an intervention should target to address frail elderly people's own adaptive abilities and to promote their well-being. The intervention we designed was based on this theory, and directly linked SMA to the dimensions of well-being. The intervention was called 'Grip

op het leven' (grip on life), with GRIP being an acronym for *Groningen Intervention Program*. This program consists of several interventions. The intervention described in this thesis is one of them. The main aim of the intervention was to increase the SMA of frail elderly patients, in order to promote their well-being. The intervention is described in Chapter 6. The new intervention was tested in a randomized experiment.

1.4 The main theoretical model and hypotheses

1.4.1 Problem definitions

The main variables in this study were frailty, SMA, and well-being. We investigated them in two ways. Firstly, the expected relations between the main variables were investigated in a pilot sample, a community sample, and a clinical sample of moderately to severely frail elderly people. Secondly, we investigated the effects of the SMA intervention. In Part I of the dissertation (testing the SSMA theory), we describe our investigation into how SMA can be operationalized, how those elderly people most at risk of adverse outcomes can best be selected, if the relations between the main concepts were as expected by the SSMA theory, and whether it would make sense to carry out the intervention to increase SMA. In Part II of the dissertation, we discuss our main question: can the SMA intervention increase well-being by increasing SMA in moderately to severely frail elderly people?

The theoretical models presented in this chapter apply to both parts of the study, because the same concepts were used in Parts I and II. Moreover, the concepts all relate to the same problem.

Part I had the following problem definitions:

- Can SMA be validly measured?
- How can those elderly people most at risk of adverse outcomes best be selected?
- Do frailty, SMA, and well-being relate to each other in the way predicted by the SSMA theory? Finding the expected relations would indicate that it makes sense to increase SMA in frail elderly people to increase their well-being.

Part II had the following problem definition:

- Can SMA in frail elderly people be increased by means of an intervention and does this lead to increased well-being? An exploratory question was whether increased SMA influences the use of care.

1.4.2 The main variables and their expected relations

SMA refers to abilities to realize and maintain well-being. The aim of the intervention was to increase the SMA of moderately to severely frail elderly people. The main outcome of this increased SMA was increased well-being. The adequate use of care (both health care and related services such as homecare) was considered an exploratory outcome measure.

Frailty was the selection variable in this study. Frailty was expected to lead to a decline in SMA and well-being [see also 11], and, therefore, to identify the elderly people most at risk of adverse outcomes. The elderly people in this study were all moderately to severely frail. However, because this covers a large range of frailty (i.e., the variance in frailty was large enough), we thought it feasible to also investigate the links that frailty has to SMA and well-being.

The relationship between frailty and SMA is most probably reciprocal, and SMA can be expected to retard frailty. Frailty leads to a decline in well-being because of the resource-loss it implies. Research 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, focused on distress or depression, the negative side of well-being [see, e.g., 11,55-59]. It has rarely been investigated to what extent frailty relates to indicators of quality of life or well-being other than distress, and what relation it might have to positive indicators of well-being [see, e.g., 11]. Because the absence of distress does not necessarily imply the presence of positive well-being, we used both concepts here [e.g., 60]. Both positive well-being and the absence of negative well-being were addressed: positive well-being in the context of 'overall well-being', integrating both cognitive and affective well-being; negative well-being in the context of 'psychological distress'. It was expected that increased SMA would lead to more overall well-being or to less decline in overall well-being, and to less psychological distress or to less increase in psychological distress.

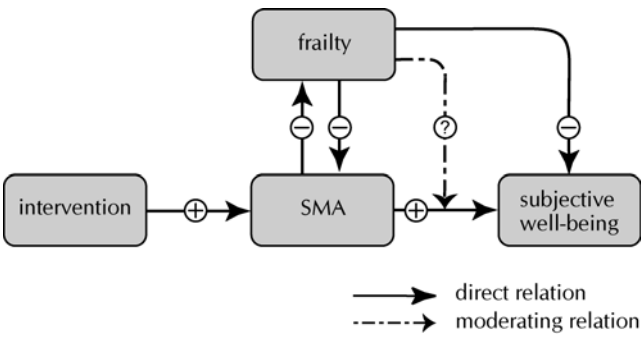

Figure 1-2. *The main variables and their principal relations investigated*

We expected that the relations of SMA and frailty to well-being would be both direct and mediated by each other. Firstly, we expected that frailty would lead directly to a decline in well-being and that SMA would directly increase well-being. Secondly, we expected that SMA would contribute to well-being through influence on frailty, thus, via the neutralization of losses. Thirdly, we expected that frailty would negatively influence well-being through its negative influence on SMA.

It was assumed that frailty leads to inadequate use of care, an assumption which was based on other frailty or related research [1,14-17,20,61]. Increasing SMA means increasing people's adaptive capacity and this might be related to increased variance in the use of care. That is, increased SMA could be related to either more or less use of care, depending on people's situations. Those in need of more care actually get more care when their SMA increases and those in need of less care reduce their use of care when their SMA increases. Because there is no standard for 'adequate' use of care, we were able to test this assumption about the use of care only indirectly via the variance of care.

The main variables and their relations are summarized in the model depicted in Figure 1-2.

1.4.3 The main hypotheses

About the relations between frailty, SMA, and well-being

- Frailty will lead to a decline in well-being in the short term and in the longer term.
- Frailty will lead to a decline in well-being partly because it leads to a decline in SMA.
- Because of the reciprocal relationship between frailty and SMA, SMA will delay frailty.
- SMA will contribute to well-being in the short term and in the longer term.
- SMA will lead to higher well-being partly because it leads to lower frailty.
- The positive contribution of SMA to well-being will continue when frailty increases.

About the effects of the intervention

- The SMA intervention will increase 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 well-being in the short term and in the longer term.
- The increase in well-being will be caused by an increase in SMA.
- Increased SMA can lead to both increased and decreased use of care. Therefore, the variance in use of care will increase with increased SMA.

1.5 More complexity: Additional variables and hypotheses

We considered that other variables were likely to influence the main variables (frailty, SMA, and well-being), their relations, and the operation of the intervention. In the following section, these variables are introduced and hypotheses about them are presented.

1.5.1 Other variables and their relations

Mastery

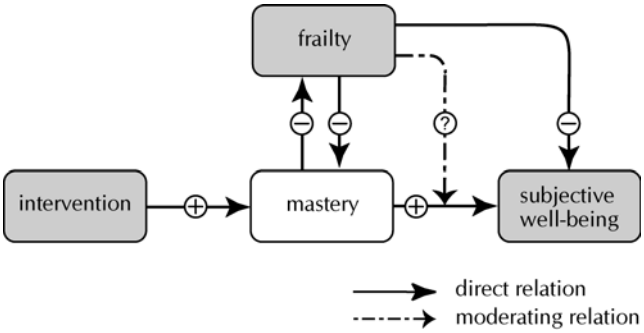

Figure 1-3. *Mastery and its possible effects on well-being*

We expected the influence of mastery to be comparable to the influence of SMA, because they are comparable concepts. However, it was hypothesized that SMA is a stronger and more precise predictor, because SMA refers to abilities systematically linked to the substantive dimensions of well-being as specified by the SPF theory, whereas mastery is a more general capacity. We expected that more mastery would lead to higher well-being in the same way as SMA does, directly and via frailty (Figure 1-3). Moreover, we expected that frailty would negatively influence well-being through its negative influence on mastery, and that the positive contribution of mastery to well-being would continue when frailty increased. Lastly, we expected that the SMA intervention would increase mastery. We thought it likely that increased SMA would imply an increased general feeling of control.

Loss-frame

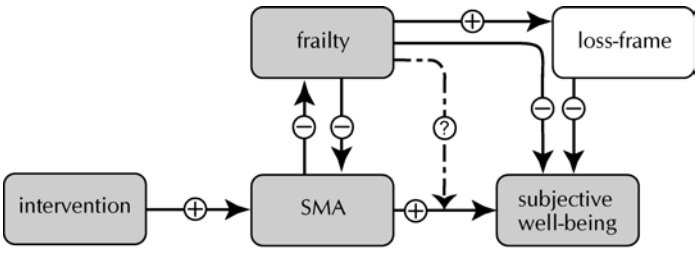

Figure 1-4. *A loss-frame and its possible influence on well-being*

A loss-frame or loss-perspective, as opposed to a positive frame (one of the self-management abilities), is a cognitive frame in which people see only their losses and expect that their situation can only deteriorate. Having such a loss-

frame implies that people do not invest in the maintenance of resources, but focus mainly on the present losses [62]. This lack of investment in the maintenance of resources can lead to even more losses. Being contrary to a positive frame, the influence of a loss-frame is opposite to that of SMA. A loss-frame is a way in which people frame the losses they experience (negatively instead of positively), in the same way as SMA is a way to handle the loss of resources. We expected, therefore, that the influence of frailty (losses) on well-being would be partly via a loss-frame (Figure 1-4).

Neuroticism

Neuroticism can be regarded as a component of a general predisposition to ill health [63] or as a generic underlying risk factor for both psychological and somatic ill health [64]. It has been shown to be prospectively, directly linked to somatic and psychiatric ill health [63,64]. Neuroticism can be described as proneness to negative emotional experiences and future psychiatric disorders, as a manifestation of general susceptibility to illness [63], or as emotional instability [65], characterized by features such as nervousness, worries, or gloom.

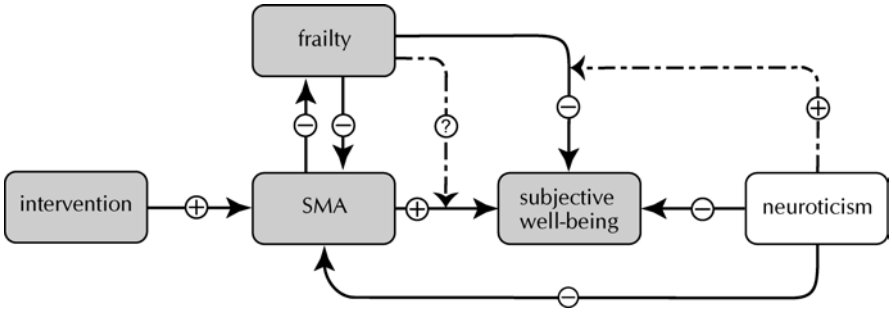

Figure 1-5. *The possible influences of neuroticism on frailty, SMA, subjective well-being, and their relations*

Because it forms a generic risk factor for ill health and well-being, neuroticism may have several links to frailty, SMA, and well-being (Figure 1-5). Firstly, neuroticism can lead to lower well-being, directly and mediated by SMA. Neuroticism as a generic risk factor causes this relation directly [64]. Neuroticism has been shown in much research to have an effect on well-being via other mechanisms, such as coping strategies [see, e.g., 65-69]. Here, SMA is proposed as such an 'other mechanism'. Neuroticism may hamper adaptation to adverse events, such as a chronic illness [see, e.g., 70]. It was expected that neurotic people would have a lower level of adaptive resources, which in turn would lead to lower well-being. Secondly, neuroticism can moderate the influence of frailty on well-being. That is, frailty in more neurotic people leads to lower well-being than does frailty in less neurotic people. Comparable effects can be found, for instance, in the research of Oldehinkel and others [71]. They found that people with low levels of neuroticism are resilient and that neuroticism modifies the effect of disability on the onset of depression in elderly patients. It can also be found in the

research of Evers and others [70], who found that neuroticism was the strongest predictor of anxiety and depressive mood in rheumatism in a follow-up period of 5 years.

Modifiers of the effect of the intervention on SMA

Frailty, a loss-frame, and neuroticism were expected to influence the effects of the intervention on SMA (Figure 1-6).

Level of frailty might alter the effect of the intervention on SMA. The sample covered a large range of frailty. We expected that the intervention would have differential effects within this range and that the intervention would have the most effect on people in the 'middle-range' of frailty (i.e., frailty which is not too low and not too high).

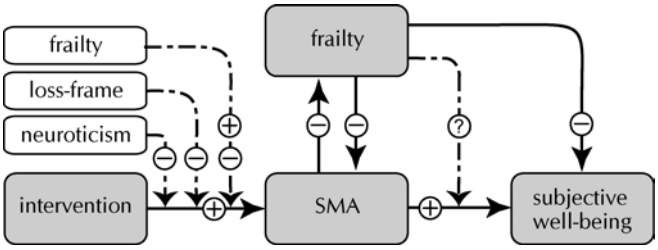

Figure 1-6. *Possible modifiers of the effect of the intervention on SMA*

A loss-frame was expected to be a modifier of the effect of the intervention, too. We considered it possible that the intervention would influence SMA less when people had a stronger loss-frame, because it may be harder to convince them to invest in maintenance of resources. Moreover, the stronger the loss-frame, the more difficult it might be for people to make a switch to a more positive frame.

Lastly, neuroticism was expected to be a modifier of the effect of the intervention on SMA. We considered it possible that the intervention would have less influence on SMA when people were more neurotic. Pushkar, Reis, and Morros [73], for instance, found that the effect of their intervention on well-being was lower for neurotic people. On the contrary, Oldehinkel, Ormel, and Neeleman [74] found that highly neurotic people benefited more from positive life change (events and life changes that restore hope, provide relief from ongoing stressors, etc.). Positive life change had more positive influence on the time required for remission from depression in women who were more neurotic. Though we thought it most likely that neurotic people would benefit less from the intervention, we recognized that it was also possible that they would benefit more.

1.5.2 Summary of hypotheses about the other variables - relations

About mastery

- Mastery will contribute positively to well-being in the short term and in the longer term.
- Mastery will lead to higher well-being because it leads to lower frailty.
- Frailty will lead to a decline in well-being partly because it leads to a decline in mastery.
- The positive contribution of mastery to well-being will continue when frailty increases.

About loss-frame

- Frailty will lead to lower well-being partly via a loss-frame.

About neuroticism

- Neuroticism as generic risk factor will lead to lower well-being.
- Neuroticism will lead to lower well-being partly because it leads to lower SMA.
- Neuroticism will moderate the influence of frailty on well-being; that is, frailty in more neurotic people will lead to lower subjective well-being than will frailty in non-neurotic people.

1.5.3 Summary of hypotheses about the other variables – intervention

- 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 its effect on mastery.
- The level of frailty will influence the effect of the intervention on SMA. It is possible that the intervention will work best for the patients in 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.

1.6 Outline of the dissertation

Part I (Chapters 2 to 5) concerns the expected relations between the main concepts, thus, the testing of the SSMA theory. Chapter 2 addresses whether SMA can be measured validly. The development and validation of an instrument to measure SMA is described. Two cross-sectional data-sets were used: one from a pilot study (n = 275) and one community sample (n = 1,338) collected in our research group [74]. Chapter 3 addresses how those elderly people most at risk of adverse outcomes can best be selected, and shows the negative influence of frailty and age on SMA. The same community sample was used as in Chapter 2. Chapter 4 provides a description of the investigation into the expected relations between frailty, SMA, and subjective well-being in the same two cross-sectional data-sets as in Chapter 2. This was meant to answer the question if frailty, SMA, and well-being relate to each other in the way predicted by the SSMA theory, and if it, therefore, makes sense to try to increase SMA in frail elderly people to increase well-being. Chapter 5 addresses what relates to well-being in frail elderly people in the longer term (6 months). We used data of a sample of moderately to severely frail elderly people, recruited for the intervention study (n = 99).

Part II (Chapters 6 to 8) concerns the main study, the intervention study. The longitudinal data of the intervention sample were used. In Chapter 6, the methods of the intervention study, sample characteristics, and a detailed description of the intervention are given. In Chapter 7, the question is addressed whether SMA in frail elderly people can be increased by means of an intervention and if this leads to increased well-being. The short-term and longer-term effects of the SMA intervention on SMA and well-being were evaluated. Chapter 8 gives a process evaluation of the intervention and shows cases of patients for whom the intervention was either successful or unsuccessful.

Finally, in Chapter 9, a summary of the results is given, as are the overall conclusions and implications of the results for the main problem.

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Part I
Testing the SSMA theory: relations between concepts and measurement