A TALE OF TWO ADAPTATIONS

COPING PROCESSES OF OLDER PERSONS IN THE DOMAIN OF INDEPENDENT LIVING

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PROEFSCHRIFT

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'it was the best of times, it was the worst of times, ...'
(A tale of two cities, Charles Dickens)

They say older people are confronted with various problems as they age. Well, so are younger people, especially when they jump into the adventure referred to as Ph.D. project. I learned quite a few invaluable things during the years I spent working on this project, but I only survived thanks to the many people who supported me.

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CONTENTS

PART ONE

INTRODUCTION AND THEORETICAL FRAMEWORK

CHAPTER ONE

A TALE OF AGEING, ENVIRONMENT, AND BEHAVIOUR

Once upon a time, old people lived at the heart of society. They lived with their families, their children, and grandchildren. Losses in physical capacities were compensated by worldly wisdom and support from the younger people around them. Problems in daily life were solved almost unnoticeably. Tailormade solutions were invented and designed in close and intensive cooperation by people who knew all about the person involved.

But as the years went by, society grew more individualistic and everybody, including the older people, were more and more committed to themselves. Independent living was everybody's motto and the newly gained freedom was appreciated by the young and old. There was, however, a down side to these developments: with older people being more committed to themselves, in less supportive, more demanding environments, losses in various resources became more pronounced. Families and friends, though still willing to help and give support to their older relatives, became less involved in the everyday process of living and dealing with daily hassles, which made it harder for them to keep up the quality of their bespoke tailoring. Society tried to intervene and invested significantly in the design and production of state-of-the-art solutions. At the same time, older people found it harder to explain their specific needs and wishes and to get in touch with the right professionals.

The story ends sadly: in confusion and misunderstanding, warehouses full of bright ideas and clear-cut solutions are not being implemented or used by a population of older people, in need of suitable solutions to their problems.

This dissertation addresses how older persons cope with problems that confront them in their homes and seeks to identify important psychological and situational determinants of this process. The goal is to arrive at suggestions to enhance practical problem solving by older individuals and to formulate recommendations for policy and design. The tale above, though admittedly exaggerated and simplified, holds some important parallels with the present situation regarding ageing and independent living. Many people find their autonomy challenged by physical decline at some point, since the general trend in physical capacities shows a negative relationship with age. For several decades, numerous researchers, designers,

and other practitioners have devoted their time and energy to finding and designing the optimal living environment for older people. There is, however, much variability (both inter- and intra-individual) in patterns of ageing processes: physiological ageing is universal but not uniform (Fozard et al., 1992). With the acknowledgement of the heterogeneity of the elderly population, the quest has become even more complex and the importance of flexibility and adaptability of the environment has become clear. At this point, it is important to consider that recent technological advances not only provide new forms of solutions, but sometimes contribute to the emergence of particular types of new problems too (Willis, 1996).

A major shortcoming of most of the research was spotted, among others, by Lawton (1985): much of environmental psychology, and especially gerontology, casts the person as the reactor to environmental press. Many new housing environments and technical aids, specifically planned for the elderly, are designed with extreme care and attention for support and the compensation of decreasing capacities. The task of designing on behalf of older people has most often been construed in terms of prosthetics, that is, compensating for personal loss through environmental support (Lawton, 1990). In contrast, the proactive aspect, encouraging and empowering older people to actively engage in adaptive behaviour to preserve congruence between their environment and their capacities, has hardly been considered. However, the role of the individual as an active player in person - environment interaction deserves attention as well.

1.1 Successful Ageing: Proactive Adaptation

The aim of this dissertation was to study the role of the older individual as an active agent in the process of independent living. Independent living and ‘successful ageing’ require a high level of congruence between the wishes and needs of the ageing person and the characteristics of the environment (Kahana, 1982; O’Connor & Vallerand, 1994). This perfect fit between environment and individual cannot be guaranteed by a flexible or adaptable environment alone, it also requires a proactive attitude of the individual towards this environment. Choice and self-direction are crucial for a smooth interaction between person and environment. A proactive attitude is imperative for optimal congruence between home and inhabitant, and, in addition, it gives the person a sense of control, which in itself is a significant determinant of well-being (Brandtstädter & Renner, 1990; Fry, 1989; Skinner, 1996).

The subject is approached from an adaptational viewpoint. The process of independent living is regarded as an adaptation process in which the role can be studied of the individual, resources in the social and physical environment, the various adaptive strategies, and important determinants. The concept of adaptation will be discussed in relation to a number of other relevant concepts related to motivation, personality, and control and competence. All of these subjects can be discussed both in terms of their relation to the physical environment and in terms of their relation to the ageing process.

1.2 Environment, Behaviour, and Ageing

Environmental psychology is the study of the interrelationship between behaviour and experience and the built and natural environment (Bell, Fisher, Baum, & Greene, 1990); an area of psychology that studies the transactions and interrelationships between experiences and actions of people with their sociophysical surroundings. Environment-behaviour relationships have emerged as an important area of inquiry in both the planning and design professions and the behavioural sciences since the 1960s (Craik, 1996; Evans, 1996; Lang, 1987; Stokols, 1995). Although it is often regarded as an area within psychology, the multi-disciplinary nature of the problems studied often requires the concepts, theories, and methods to be drawn from other parent disciplines, or developed from scratch. The field is held together, not so much by an umbrella theory, but rather by a shared interest and focus on people's relationships with their sociophysical surroundings.

Research on environmental psychology has been guided by a number of different models that developed through the years: from deterministic and situationist models, to interactional and transactional models. One of the early conceptualizations of the influence of the physical environment on behaviour was environmental determinism. This concept holds that the environment (social, built, or natural) directly shapes the behaviour of the people within it and that all behaviour is caused by factors in the environment. The opposite view, possibilism, emphasizes the role of man and places the cause of behaviour inside the organism. Situationist theories account for behavioural change in terms of the stimuli and events occurring within an individual's environment. The interplay between environmental conditions and intra-personal factors that is lacking in these conceptualizations, is present in the interactional models, which were developed later. However, as Stokols (1995) argues, early interactional theories are still unidirectional: 'they predict behavioural changes from environmental conditions, alone, or from both situational and intra personal factors' (p. 825). He states that transactional theories highlight the enduring qualities of interdependence between people and their environments. With the latter model in mind we will discuss, describe, and investigate the subject at hand.

Environment and ageing research has always been an explicitly and insistently multidisciplinary effort including not only psychology but also such disciplines as sociology, anthropology, architecture, geography, economics, and medicine (Carp, 1987). Both age and

physical health intervene in the transactions between individuals and their environment. As individuals age, their relationships to particular environments become more habituated, making it more difficult to modify either their environment or their behaviour than when they were younger. Moreover, a possible concomitant of ageing is disease-based frailty. This poses complex problematic issues to those who seriously want to enhance successful ageing in place.

When studying ageing and environment, the themes of competence and adaptation are relevant and often central, as was for instance reflected in Rapoport's discussion of six major theories in this domain (1982). Logically, these concepts also play major parts in the present study. However, competence is a very broad concept, that holds more aspects than physical capacities alone. Though this will be discussed in the following chapter, I would like to stress here that, in view of this broader scope of competence, this will not be a tale of loss and decline alone. In addition, more concepts besides competence will be shown to influence adaptive behaviour of older persons.

1.3 Theory and Practice

Because environment-behaviour relations joins a scientific discipline and profession, there have always been two major agendas: generation of knowledge about the relationship between people and their physical environment, and successful interventions in the design, maintenance, and management of the physical environment to enhance the quality of people's lives (Schneekloth, 1987).

The theoretical challenge in the present research mainly lies in the development of a coherent model, based on ideas from different theoretical domains. Building on knowledge and methodologies from social psychology, environmental psychology, and gerontology, the goal is to derive and test a model that describes and explains how independently living, older persons cope with problems that confront them in their homes and seeks to identify the important psychological and situational determinants of this process.

The practical challenge is twofold. First, Filion, Wister, and Coblentz (1992) reported that although in most studies on housing for the elderly a marked preference for 'ageing in place' is manifested, the elderly seem to give little time to the consideration of future housing options and refrain from seeking support services or making design alterations. Consequently, the efforts of many designers of housing or technical aids have not paid off in spite of the apparent need for it. Though we do realize that a technical or design-oriented adaptation is not always the only, and certainly not always the best solution to problems in old age, there are many situations or instances in which technical solutions are available, but not used. Our goal

is to provide some possible reasons for this phenomenon and to understand where in the process the critical phases lie. The term 'process' refers to the coping, problem-solving process of individuals, which basically is a design process: "Farmers design when they figure out where and when to plant various crops. Lawyers design when they prepare a strategy for a client's defence" (Zeisel, 1984, p. 16). "Everyone designs who devises courses of action aimed at existing situations into preferred ones" (Simon, 1969, p.55). Similarly, older people themselves design, when they figure out how to cope with the problems they are confronted with in their homes. They go through the same phases as the designer i.e. recognition and analysis of the situation, conceptualization of options, choice and implementation of the optimal strategy, and evaluation. If we want to improve this process and its outcome, it is imperative that we understand why, but also where in the process problems occur problems occur.

The second part of the challenge lies in the translation of these findings into recommendations for design and implementation. This has always been a trial for researchers in the field of environmental psychology, and probably more generally in the social sciences as well. A large part of this problem can be defined in terms of communication between people from domains as different as research and design. However, part of it can also be explained in terms of the type of research: some studies are more close to real life than others. This does not say anything about the importance or meaningfulness of these studies. However, in view of the goals that we have stated before, our aim is to always keep real life in mind and to carefully balance the theoretical thoroughness and ecological validity of our studies. The practice-oriented recommendations that will follow from this study are mainly geared toward the process of design and implementation of environmental adaptations in the home by the elderly user rather than toward the outcome of the design process itself, in terms of guidelines for housing and technical aids.

1.4 Overview of this Dissertation

In this chapter I have tried to sketch the issues that are the basis of this dissertation. Much attention is paid to studying the individual in, and in interaction, or rather, transaction, with his or her actual setting. Though multidisciplinary in nature, the research distinctly leans toward behavioural science. Had it been more architecture oriented, then the issues would probably have been defined more as a set of related design problems. In reality, however, these issues are very much intertwined and show surprising similarities, besides the obvious differences. The analogies and differences between research and design are clearly discussed in Zeisel's Inquiry by Design (1984), where design was characterized by the terms 'images,

presentations, and tests', and, in parallel, research was characterized by 'concepts, hypotheses, and tests'. Both processes require creativity, personal skill, and impersonal order.

The remainder of this dissertation is structured as follows:

In Chapter two, the theoretical groundwork is laid, in which theories on adaptation and related concepts are discussed. Environmental psychology, social psychology, and gerontology all proved abundant resources for relevant theories and models. In general, similarities between these models were more striking than dissimilarities. The result of this exercise was a general model of adaptive behaviour, which will be explored and tested in the subsequent chapters.

Part two consists of Chapters three and four, in which two survey studies are described. The goal of these studies was to make a detailed study of concrete adaptive behaviour of older people in their homes, to fill in the gaps in the theoretical model, identify the relative importance of certain determinants, and to identify the phases in the adaptive process in which complications occur. A combination of methods - interview, questionnaire and walk-through checklist - was used to study the problem setting, the adaptive process, and its outcome.

In the third part of this dissertation, two experiments are described (Chapter five and six), in which the roles of a number of important concepts - self-efficacy, personal dispositions, and goal importance - are studied more closely, using a scenario and questionnaire paradigm with hypothetical problem situations. The scope of these studies is less broad than the ones in Part two, but the paradigm allows more controlled testing of hypotheses without sacrificing ecological validity.

The dissertation ends in Chapter seven with general conclusions and a discussion. Implications and recommendations are formulated, both for theory and practice.

CHAPTER TWO

THEORIES ON ADAPTATION AND RELATED ISSUES

The central theme in this dissertation is the concept of adaptation. The focus will be on adaptation of older adults, with a specific interest in their interaction with the physical environment. Adaptation is defined as the dynamic process of minimizing the discrepancy between an actual and a desired state or situation. The process is dynamic in the sense that both the actual (input) and the desired (output) situation are subject to change over time, due to external (social and physical environment) and internal (individual) factors. This control is not always reactive, but can be proactive as well, when persons initiate changes motivated by a desire for new or more stimulation for instance. Continuous monitoring and feedback by the individual is necessary to balance and control the person-environment system. It is this process of regulation we call adaptation.

Adaptation is a concept that deserves the interest of researchers from both the field of environment-behaviour and the field of gerontology. As individuals find themselves in and interacting with an environment, they are constantly adapting their behaviour, their perceptions and the situation itself. The ageing process can also be seen as one of continuous adaptation: adaptation both to the external environment and to the changes in internal capabilities and functioning that take place during the life cycle (Lawton & Nahemow, 1973). Losses in different life domains threaten everyday functioning and, thus, require adaptation. Effective mastery of this developmental task is an integral part of successful ageing (Baltes & Baltes, 1990).

2.1 Adaptation

In this dissertation, the terms adaptation and coping are used interchangeably. Both terms appear in the literature, referring to processes of goal regulation and achievement. Lazarus and Folkman (1984a, Folkman & Lazarus, 1990) have defined coping as the cognitive and behavioural efforts to manage specific internal or external demands that are perceived as straining or exceeding an individual's resources. With coping or adaptation we refer to the dynamic process of minimizing the discrepancy between an actual and a desired state or situation. The characteristics of this process can vary widely. Within the framework of the

present research, we will only focus on processes that are not automatic or habitual (Aarts, Paulussen, & Schaalma, 1997) and moderately to fairly complex.

Adaptation is said to occur in situations where the environmental demands exceed the person's resources (Lazarus & Folkman, 1984a), where there is a lack of congruence between the individual's needs and life situation (Kahana, 1982), where there is stress between the perceived self and the perceived environment (Lawton & Nahemow, 1973), or where there is a lack of congruence or consonance between the image of a one's living situation and one's aspiration level (Festinger, 1957; Priemus, 1984; Tazelaar, 1983). Within the framework of this dissertation, the focus is on situations in which a difference exists between an actual and a desired state, due to changes in an individual's life competence or perceptions, which hinders or prevents this person from performing certain actions in the home and, through this, from attaining a certain goal. When this happens, various adaptive strategies can be called upon to re-establish the fit between person and environment.

2.1.1 Strategies of adaptation

In situations where adaptation is called for, people can generally choose their strategy from a range of possible alternatives. Most theories of adaptation categorize adaptive strategies into two main classes. Within the psychological domain, Lazarus and Folkman (1984b) categorize coping strategies into problem-focused coping and emotion-focused coping. Problem-focused coping processes are directed at altering the situation that is causing distress; the goal is to confront the problem directly. Emotion-focused coping processes are directed at regulating the emotional response to the problem rather than altering the situation, they can for instance include distancing, escape-avoidance, or positive reappraisal of the situation (Folkman & Lazarus, 1990). In his theory of cognitive dissonance, Festinger (1957) also describes two similar methods to reduce dissonance: changing an environmental cognitive element or changing a behavioural cognitive element.

Folkman and Lazarus (1990; Lazarus and Folkman, 1984b) discern several different types of factors that can influence coping. They suggest that appraisals of coping situations are influenced by antecedent person characteristics such as patterns of motivation, beliefs about oneself and the world, and recognition of a broad range of personal resources. Two categories of appraisals are defined: primary and secondary appraisal. Though the names might imply otherwise, these terms do not refer to a restricted order in which the appraisals appear or a dominance of one type over the other. Primary appraisals are related to the question: "What do I have at stake?". It consists of the judgment that an encounter is irrelevant, positive, or stressful and, if stressful, whether it takes the form of threat, harm or loss, or challenge.

Secondary appraisals, related to the question: “What can I do?”, consist of judgments concerning what might and can be done. These appraisals are influenced by the perception of the availability of various types of resources: personal (physical competence, psychological beliefs, and cognitive competence) and environmental (social support and material resources).

Within the environment-behaviour domain, Lawton (1989) discriminates between environmental proactivity and reactivity. Proactivity involves eliminating discrepancies between the actual and the desired course of development by actively adjusting developmental and life circumstances to personal preferences. Reactivity, on the other hand, implies removing these discrepancies by adopting the opposite strategy of adjusting personal preferences and goal orientations to given situational forces and constraints. The latter strategy is sometimes called environmental docility and has a negative connotation. Lawton and Nahemow (1973) argue that competence is the main determinant of adaptive behaviour, referring to basic sensory, perceptual, motor and cognitive functions, although they acknowledge the possible role of other factors, such as needs, traits, and personal style.

Within the gerontological domain, Brandtstädter and Renner’s (1990) theory of coping deserves our attention. They posit two complementary coping mechanisms to maintain life satisfaction: accommodation, involving accommodation of goals to losses and obstacles, and assimilation, involving active modification of the environment in the service of ongoing goal attainment. Both modes of coping are said to be related to higher life satisfaction. Brandtstädter and Renner discern several possible moderating conditions and constraints of coping, the most important of which is control. Heckhausen and Schulz (1993) also focus on the role of control-related aspects. However, they propose two types of control - primary and secondary - congruent with the two types of adaptation, whereas Brandtstädter and Renner argue that only one type of control is relevant since the process of accommodation often is reactive and should not be considered a deliberately chosen strategy or control. Brandtstädter (1992) clearly states that accommodation can never imply an intentional action: “We cannot give up our beliefs and commitments merely because it seems advantageous to us...”. This implies that perceptions of control (and control theories) solely refer to assimilative strategies. In fact this is a major point of discussion in control research. We shall return to this subject in section 2.2.3.

Of course, the range of possible adaptive actions is much more diverse than can be deduced from these categorizations. Coping is normally characterized by a high degree of variability among and within persons (Folkman & Lazarus, 1990). Care should be taken not to over-simplify descriptions of adaptive behaviour. More elaborate categorizations of adaptive

behaviour, however, are more dependent on the scope of the study and the specific type of coping or problem situations. As most of the research in the general domain of coping focuses on interpersonal problems, more detailed categorizations, like those proposed by Folkman and Lazarus for example, are less relevant within the framework of our research. A second important issue that should be raised at this point is that although generally the theoretical distinction between the two types of coping may be very clear, real-life coping behaviour will often bear aspects of both types simultaneously.

Although the elaborations into more detailed categorizations of coping mechanisms may differ significantly among the various theories, the dual-process concepts all seem to center on the distinction between problem-focused and emotion-focused coping. All are based on the subject that is adapted: something in the actual situation or something in the individual's perceptions or standards. In most theories, this distinction is confounded with the distinction between goal attainment and goal relinquishment. However, ideas about the importance of various determinants and underlying mental processes of the choice of a strategy in a coping situation differ between the various theories. These determinants of adaptive behaviour can roughly be divided into needs and goals, personal dispositions, and control and competence-related aspects. The first factors, which are pure person-variables in nature, will mainly influence what Folkman and Lazarus have called primary appraisal of the coping situation. Competence and control, which are more transactional because they depend on both person and situation characteristics and their congruence, will have a bigger impact on secondary appraisals. The possible role of these various determinants will be discussed in section 2.2, after a short discussion of the development of adaptation with age.

2.1.2 Ageing and adaptation

A common preconception about ageing is that people, as they age, become less flexible and less competent to change their environments. In addition, age-related losses in adaptive resources are often assumed to have negative effects on perceptions of the self, satisfaction and perceptions of control (e.g. Aldwin, 1991; Lawton and Nahemow, 1973). Rigidity, disengagement, and environmental docility are concepts that are often mentioned in relation to old age. In this section, this relationship between ageing and adaptation will be discussed. We see three different starting points for this discussion: biology, cohort-effects, and development.

First, if we consider biological ageing, individuals are very likely to be confronted with more frequent and different kinds of problems as they age. In addition, they are more likely to suffer losses in the physical and social domain. A decrease in resources could be related to a

decrease in control of problem-focused strategies. People may also experience relatively more concerns about health and less in domains of, for instance, work. These factors cause the older individual to engage in more emotion-focused than problem-focused coping (Folkman & Lazarus, 1980).

Secondly, we can consider differences between younger and older persons from the perspective of cohort-effects. Different experiences, levels of education, values and habits may very well influence the way people cope with problems. For instance, lower levels of education might predispose people in older cohorts to different coping strategies from persons in younger ones. However, the precise historical trends that might account for these cohort differences have not been systematically examined in the literature (Aldwin, 1991).

The third starting point from which we can predict or try to explain the relationship between ageing and adaptation is from developmental processes. Baltes and Baltes (1990) have formulated what they call “a prototypical strategy of successful ageing” and named its key concept “selective optimization with compensation”. They argue that it is the adaptive task of the (ageing) individual to select and concentrate on the domains that are of high priority and involve a convergence of environmental demands and individual motivations, skills, and biological capacity. Compensation should become operative when specific behavioural capacities are lost or are reduced below a standard, required for adequate functioning. It involves aspects of the mind and technology. The model describes a general process of adaptation; individuals are likely to engage in this process throughout life. However, according to Baltes and Baltes, it takes on a new significance and dynamic in old age because of the loss of biological, mental, and social reserves. Although this concept is widely accepted and cited in numerous works, care should be taken in using it: the theory of successful ageing is a normative one. Though the propositions have no doubt been based on numerous observations, the model has not been tested empirically, nor is it designed to be. There are, however, some studies that implicitly or indirectly lend support to the model, as for instance the study by Baltes and Lang (1997), who found that, although negative age effects on parameters of daily functioning did exist, a resource-rich, successfully ageing group showed fewer and less dramatic effects, attributed to more optimal, goal-maximizing selection and compensation processes. It is valuable as it provides ideas and guidelines for policy and practice, as long as we remember that the model states what could or should be, but not necessarily what is.

Neugarten (1973) reported on a number of empirical studies in the domain of (developmental) ageing and adaptation and concluded that the results were inconsistent: findings pointed out age-related changes in some domains, but not in others. At present, the inconsistencies still exist. Ruth and Coleman (1996) concluded from their review of coping in

old age that many studies show no clear indication of older people using less successful coping strategies. Folkman and Lazarus (1980) found that older adults used fewer escapist and hostile strategies. Others also reported that older adults used less escapism or avoidant coping, but similar levels of problem-focused coping (Aldwin, 1991; Irion & Blanchard-Fields, 1987). On the other hand, Wister (1989) found that as people grow older, modes of adaptation shift from active to passive, which is in line with Lawton's model of adaptation and ageing. Brandtstädter and Renner (1990) also found an age-related shift from assimilation to accommodation. They argue that while people of all ages may engage in both modes of coping, the importance of accommodative mechanisms increases with age. Additional relevant studies have mainly been performed in the area of everyday problem solving. Here ageing is often regarded as a correlate of competence or control and as such possibly an important determinant. These studies will be discussed in section 2.2.1.

Results are inconclusive; the diversity in findings probably partly reflects the increasing variance with age. Ageing is characterized by large inter-individual variability in level, rate, and direction of change, as is supported by the findings of a number of prestigious longitudinal projects (e.g. the Baltimore Longitudinal Study on Aging (Costa & Andres, 1986) or the Bonn Longitudinal Study of Aging (Lehr & Thomae, 1987)).

Differences that have been found are not necessarily due to ageing or development, but could very well reflect differences in the kinds of losses experienced or the availability of resources. In addition, the major part of these results stem from empirical studies that are cross-sectional, so that developmental effects can not be distinguished from cohort-effects. Variability in findings could also be due to the diversity of research instruments and problem domains. Lastly, findings can mostly be explained in terms of other concepts that may have moderate or strong correlations with age, for instance personal dispositions, or possible resources as determinants of the adaptation process. In the following sections, the most important determinants will be discussed: first competence and control-related aspects, then goals and motivational aspects, and finally personal dispositions.

2.2 Competence and Control-related Issues

Masterpasqua (1989) argues that the construct of the competent self has become central in the study of healthy functioning. Within his paradigm, competence is defined as adaptive cognitive, emotional, behavioural, and social attributes, complemented by a person's implicit or explicit beliefs and expectations about his or her access to and ability to implement those attributes. In contrast, in the study of ageing, competence is usually discussed in a much narrower sense, in terms of an individual's ability to perform the activities of daily living (ADL).

Competence can be conceptualized in various ways. It can be interpreted as a purely personal characteristic, referring to desirable personal qualities lying within the individual,

occasioning the exhibition of adaptive behaviour, or as a more transactional asset, i.e. the capacity to interact effectively with the environment (Lantermann 1976; Steverink, 1996, White, 1963). From an ecological viewpoint, competence does not reside solely in the individual, but represents the congruence between the abilities of the individual and the demands and resources in the context (Lawton, 1982). Control, on the other hand, refers to the capacity to take charge of what happens in one's life and to feelings of mastery and confidence. It can be discussed in terms of actual control or of perceptions and beliefs, and both as generalized ways of thinking and as situation-specific expectations. In this sense, Masterpasqua's (1989) definition of competence, as it was given above, comprises both competence and control.

Competence and control are both very broad but important concepts, relevant within the domain of ageing and adaptation. As we study these concepts we will find that the concepts are strongly related, but their roles in the process of adaptation differ. In this section we will first discuss competence in a rather general sense and then focus on competence as it relates to everyday problem solving. Then we will discuss aspects of perceived competence and control.

2.2.1 Competence

Competence has proved a relevant concept in studies on ageing, predicting range and level of adaptation (Lawton & Nahemow, 1973), activity participation (Pushkar, Arbuckle, Conway, Chaikelson, & Maag, 1997), or the impact of negative ageing developments on the person's life (Baltes & Lang, 1997) for example.

Competence is the main determinant of adaptive behaviour in Lawton and Nahemow's ecological model. In this ecological model, adaptive behaviour is the outcome of the interaction between a person of a given competence level and an environment with a given press level. Behaviour varies on a dimension from adaptive to nonadaptive. In 1982, Lawton posed the environmental docility hypothesis, originally formulated in 1970, which suggests that high competence is associated with relative independence of the individual from the behavioural effects of environmental press, while low competence implies heightened vulnerability to environmental press. In general, the hypothesis suggests that the lower the competence of an individual is, the less able this individual will be to adapt to varying environmental press. To account for the active role individuals play in the adaptation process, Lawton later formulated the environmental proactivity hypothesis (1985), which states that environmental resources are likely to be better used by people of higher competence.

Though this model has been accepted widely, some remarks should be made here. Firstly, the concepts in the model are defined in very theoretical and abstract terms, which are hard to operationalize, seriously hampering its use in empirical studies. Studies that provide support for this model have mostly involved qualitative methods (Lawton, 1985, 1989). On the other hand, the level of generality of the model facilitates its use in various domains and many studies implicitly render support to the hypotheses: Baltes and Lang's (1997) findings, for example, that competence resources had buffering functions against negative ageing effects on everyday functioning, or a study by Wister (1989) on the environmental adaptations that older people engaged in; other ecological models are also consistent with this theory, such as Pastalan's (1982) loss-continuum model, Kahana's (1982) person-environment congruence model, and Baltes and Baltes (1990) model of successful ageing.

Secondly, in Lawton's theory competence was defined as the theoretical upper limit of capacity of the individual's functioning in the areas of biological health, sensation and perception, motor behaviour and cognition (Lawton, 1982). This represents a narrower view of the individual in adaptation processes than we subscribe to: social, affective, personality-related, and motivational aspects are absent in the model. Also, competence is operationalized as a purely personal characteristic, since environmental resources were integrated in the construct 'environmental press'. In the present research we have chosen to incorporate environmental affordances and resources in a more broad competence construct, and environmental demands in the problem characteristics. A third point is that attention is only paid to the objective side of competence, though perceived or subjective competence is often more or at least equally important in influencing a person's behaviour (White, 1963; Lazarus & Folkman, 1984b). However, before we discuss this issue further, we will first briefly touch on competence within the field of everyday problem solving.

2.2.2 Everyday problem solving

Problem solving and adaptation are two concepts that are strongly related. Early researchers of intelligence and problem solving defined intelligence as the competence to adapt to one's environment (e.g. Piaget, 1970). Competent performance was assumed to be determined by a set of underlying cognitive abilities that increase over the early years in life, stabilize (e.g. Piaget, 1970), and then decline in later adulthood (Horn & Donaldson, 1976). If we want to study the competence of people to solve problems in their home environment, we could try to incorporate knowledge from the field of problem solving. However, questions could be raised whether, or to what extent, knowledge from traditional studies on problem

solving is generalizable to the real-life problems we are studying, because of the differences in the types of problems and problem solving processes that are studied.

Problems in traditional research are mainly of a symbolic nature (chess, symbolic logic, crypt-arithmetic puzzles). Performance on these traditional problem solving tasks are generally found to decline with age, especially when they are focused mainly on measuring fluid intelligence (Cornelius & Caspi, 1987; Sinnott, 1989). Fluid intelligence is associated with performance on tests of symbolic and figural reasoning. Crystallized intelligence, primarily defined by tests of verbal ability, is believed to remain more constant with age (Camp, Doherty, Moody-Thomas, & Denney, 1989; Cornelius & Caspi, 1987).

However, in the context of this dissertation we are not dealing with abstract problems, but with ecologically valid and recognizable, real-life situations, that can actually occur in the individual's life, and for which solutions are necessary that have a certain value for the individual. Hartley (1989) reports that for the layperson ‘problem’ in real-life denotes a situation in which there are one or more goals to be achieved, and it is not immedialtely clear what steps to take to achieve those goals. Knowledge that seems more appropriate stems from the field of everyday problem solving. The term “everyday problems” refers to real-world problem situations. These problems often are ill-structured, interpersonal, and more often than not have several possible solutions. In addition, these problems have ecological validity and can evoke memories, experience, emotions, and control, coping, and value processes. In a review of theoretical models of everyday problem solving and relevant issues, Luszcz (1989) states: “Rather than being an exclusively or even predominantly logical exercise, everyday problem solving becomes enmeshed in the subjective social and affective world of adult adaptation” (p. 35). For this reason, attention should be paid to individual preferences, perceptions and appraisals that influence choices and decisions in the problem-solving process, besides cognitive skills. This broad view is represented in the comprehensive model for studying everyday problem solving that Willis (1996) presented in her review of research on everyday problem solving in relation to ageing. The model consists of (a) individual and sociocultural antecedent characteristics (e.g. health, cognition, personality, historical period), (b) problem characteristics (problem representation by the individual, task characteristics, and social and physical context), and (c) outcomes in terms of physical and psychological well-being.

Results in the literature on everyday problem solving related to ageing are somewhat ambiguous. For instance Denney and Pearce (1989) conclude that performance is very clearly influenced by experience. Although this should give higher age groups the advantage, older age groups performed worse than middle-age groups; they did perform as well as young

adults. However, Cornelius and Caspi (1987) did find a positive linear correlation between performance and age. Results seem to depend heavily on the problem topics, question type, and scoring method. Sebby and Papini (1989) point out the danger of using frames of reference that uphold the prototypical young adult as the criterion by which behaviour is evaluated and stress the importance of a framework that integrates cognitive, self-knowledge, and social knowledge systems. In some studies, the number of solutions persons can produce is used as an indicator of problem-solving performance (e.g. Denney & Pearce, 1989), but in most studies, the quality (e.g. Camp et al. 1989) and type of solution is considered (e.g. Blanchard-Fields, Jahnke, & Camp, 1995).

An example of a categorization of possible response modes was devised by Cornelius and Caspi (1987). They differentiated between (a) problem-focused action, (b) cognitive problem analysis, (c) passive-dependent behaviour, and (d) avoidant thinking and denial. The first two types can be described as problem-focused, the other two as emotion-focused. Some age differences have been reported, although the relationship between performance and age is often mediated by a third variable. For instance, older adults have been shown to use more emotion-focused coping when the problem situation is appraised as uncontrollable compared with younger adults (Folkman & Lazarus, 1980; Blanchard-Fields & Irion, 1987). In a study by Blanchard-Fields et al. (1995), age differences were highly dependent on the degree to which the situation was emotionally salient: older adults were more likely to use avoidant-denial strategies overall, but especially in situations of high emotional salience. These findings are discussed in terms of development and adaptive functioning: Blanchard-Fields (1989) argued that as a result of a higher stage of maturity and development, older adults more effectively balance both instrumental and emotional/palliative coping strategies depending on the appraised controllability of the situation. There is an obvious parallel here with the theory of Baltes and Baltes (1990) that was discussed earlier. From her research Blanchard - Fields concludes that developmental differences in coping and controllability may be more profitably examined in relation to each other.

Though it is clear from this discussion that competence is not the only determinant of adaptation, it seems important to consider aspects of competence in our analysis of adaptive behaviour. Besides physical and cognitive characteristics, material and social resources also provide the individual with competence. Many of these characteristics and resources are believed to have a (negative) relationship with age and could therefore contribute to the explanation of changes in adaptive behaviour with age. We conclude that aspects of competence deserve a place in a theoretical model of adaptation of older persons. However, the part played by perceptions and beliefs of competence may be equally important. This issue will be discussed in the following section.

2.2.3 Control

The noun ‘control’ has many meanings and connotations in daily life. Of the different explanations that The Concise Oxford Dictionary (Allen, 1990) gives, the following one is closest to its meaning in this dissertation: ‘1: the power of directing, command, b: the power of restraining, esp. self-restraint’. It differs from connotations that refer to the presence of powers or authorities that can direct, order, or restrain this person’s behaviour. In this dissertation, we refer to a sense of control, to perceptions by or beliefs of the individual (in a specific situation) about the extent to which he or she can influence or produce desired events, in other words to perceived control.

Perceived control is important to psychological functioning and especially relevant to coping; in situations where perceived control is high, people are more likely to appraise the situation as a challenge than a threat. If the appraisal is that of a challenge, people are more likely to show a better quality of functioning, because they feel more confident and more capable of drawing on available resources than the person who is inhibited or blocked (Lazarus & Folkman, 1984b).

Control and control beliefs are relevant in view of the present study, since they are often thought to change with age and, in addition, play an important role in how people direct their own development and how they cope with challenges and problems (e.g. Aldwin, 1991; Bandura, 1986; Brandtstädter & Baltes-Götz, 1990; Festinger, 1957). This is also recognized by gerontologists: Baltes and Baltes (1990) argue that it is one of the challenges of later life to maintain a sense of control in the midst of the changing balance of gains and losses. However, research into age differences in control beliefs has produced inconsistent results. In the majority of these studies, control is conceptualized as a trait, mostly in terms of Rotter’s locus of control concept, which will be discussed in the following section.

Ellen Skinner (1996) formulated an integrative taxonomy of control that distinguishes between individuals' beliefs about agent-means relations, means-end relations, and agent-ends relations on the one hand and differentiates between objective, perceived, and experienced control on the other. Agent-ends beliefs are the more general control beliefs. They refer to the extent to which an agent can produce desired outcomes, without specifying the means or methods for this. Means-ends beliefs or strategy beliefs refer to beliefs about what means are effective in producing desired outcomes, whereas agent-means beliefs are capacity beliefs: they refer to expectancies about personal action control or agency. Within this second dimension, perceived control refers to control as it is used in most studies - including this one - a person’s subjective beliefs of how much control is available. The importance of the first dimension was already raised in self-efficacy theory (Bandura, 1986).

A third important dimension that can be distinguished is the level of generality on which control is conceptualized or measured. Control beliefs can be arrayed along a continuum from extremely situation-specific to extremely general or global (Skinner, 1996). At the specific end, beliefs are only relevant to certain episodes, interactions or behaviour. Note that the term situation-specific does not imply that the beliefs are purely dependent on the external situation: beliefs about person-environment interactions can also be highly situation-specific and situational appraisals of perceived control can also refer to expectations for controlling one's own response to the transaction. At the general or global end of this dimension are beliefs that span all outcomes or areas in life. Within these traditions, control is conceptualized as a trait, a pure person characteristic, independent of specific situation characteristics.

We can distinguish numerous conceptualizations of control, that can all be defined in terms of the three dimensions described above. *Perceived* control conceptualizations are most relevant in the present research, since we are looking at determinants of coping processes. *Experienced* control is an outcome of adaptation processes rater than a determinant; *objective* control is largely accounted for in our broad conceptualization of competence. Below we will discuss two of the most important conceptualizations of perceived control: locus of control and self-efficacy. These two concepts differ on the two remaining dimensions: locus of control is a *general* concept referring to *agent-ends* relations, whereas self-efficacy is a *specific* concept referring to *agent-means* relations.

Locus of Control

Locus of control is considered a trait, that is conceptualized on the level of general (agent-ends) control beliefs. Rotter (1975) distinguished between internal and external control. When individuals perceive events as highly contingent upon their own behaviour or permanent characteristics, they are said to have an internal locus of control. On the other hand, externals do not perceive events as being contingent on their actions, but on luck, chance, fate, or powerful others.

The influence of locus of control on coping has been empirically studied in a wide range of life domains and in various populations. Locus of control is sometimes found to affect (general) coping behaviour directly, with internality being related to active, problem-focused strategies and externality to avoidant or emotion-focused strategies (e.g. Gomez, 1997; Horner, 1996; Landau, 1995); in other cases, its role is mediated by appraisal or interacts with appraisal (e.g. Parkes, 1984; Peacock & Wong, 1996). This influence on appraisal was also described by Lefcourt (1976), who stated that a general belief about an internal locus of

control yields more effort and persistence in achievement situations than belief in an external locus of control.

Lachman (1986) reviewed the literature on age-related trends in the perception of control. In early studies of age differences one often finds that the elderly tend to be more external than younger adults, but later studies have shown more mixed results. For instance, Nurmi, Pulliainen, and Salmela-Aro (1992) found that subjects' control beliefs became more external with age. Lachman (1986, 1991) reported that although external control beliefs increased markedly, internal control beliefs decreased only slightly with age. A large part of the differences in findings can be explained in terms of different designs (cross-sectional vs. longitudinal) and measurements (uni- vs. multidimensional, generalized vs. specific), and whether measurements are controlled for the different types of problem domains (Nurmi et al., 1992) and mostly in terms of different definitions of control (Lachman, 1986; Skinner, 1996).

Rotter (1975) conceived of generalized control expectancies as having their greatest influence when the situation is ambiguous and novel. Lazarus and Folkman (1984b) also subscribe to the idea of general dispositions and beliefs mainly being valid in situations of high ambiguity and point at the danger of over-simplifying, when specific circumstances and beliefs and changing relationships between people and their environments are disregarded. Within the framework of this study, where we study the older adult as an active agent, directly interacting with the environment, with control as a possible determinant of concrete intentional choices and behaviours, the use of the self-efficacy paradigm, a situation-specific concept, seems more appropriate (Bandura, 1986; Nelson, 1993; Skinner, 1996). In line with this, Lazarus & Folkman (1984b) also argue that trait conceptualizations and measures of coping underestimate the complexity and variability of actual coping efforts. This concept is discussed below.

Self-efficacy

The construct of self-efficacy, which, as locus of control, has its roots in social learning theory, is defined as people's judgments of their capabilities to organize and execute the courses of action required to attain designated types of performances (Bandura, 1986). The construct is conceptually similar to the perceived behavioural control term in social psychological theories, as for instance the theory of planned behaviour. In that context, it proved a valuable addition to an earlier model, the theory of reasoned action, in which intentions and behaviour were only predicted by attitudes and social norms (Ajzen, 1991; Eagly & Chaiken, 1993).

Within the framework of control, self-efficacy falls in the category of agent-means beliefs, implying that for a complete control judgment one also needs means-ends beliefs, which, in Bandura's work, are termed response efficacy. Self-beliefs of efficacy exert their influence on human functioning through motivational, cognitive, and affective intervening processes; self-

efficacy beliefs also shape developmental trajectories by influencing the choice of pursuits and selection of environments (Bandura, 1992). It has been shown, for instance, that the stronger self-efficacy is, the higher the goals are that people set for themselves and the firmer their commitment to them is (Bandura & Wood, 1989; Locke, Frederick, Lee, & Bobko, 1984). Challenging goals raise the level of motivation and performance attainments (Locke & Latham, 1990). Self-efficacy also influences appraisal of stressful situations by mediating anxiety and stress (Bandura, Reese, & Adams, 1982; Bandura, Taylor, Williams, Mefford, & Barchas, 1985). How self-efficacy can influence selection processes has been shown in studies of career making and career development for example (for a review see Lent & Hackett, 1987). Lastly, numerous studies exist that have shown that self-efficacy is a significant determinant of performance, even when controlling for underlying skills (e.g. Bandura, 1986; Locke et al., 1984). In relation to ageing, Bandura (1986) argued that the self-efficacy problems of the elderly centre on reappraisals of their capabilities. This is a healthy and necessary process. However, in cases where perceptions of self-efficacy are too pessimistic, the effect can be destructive:

> "A declining sense op self-efficacy is apt to set in motion self-perpetuating processes that result in declining cognitive and behavioural functioning. People who are insecure about their efficacy not only curtail the range of their activities but undermine their efforts in those they undertake. The result is a progressive loss of interest and skill" (Bandura, 1986, p. 419).

He identified four sources of self-efficacy information: performance attainments, vicarious experiences, social influences, and states of physiological arousal. In the face of decreasing health and resources, older persons may run the risk of negative information from these sources, e.g. when they see their own or their peers' performances decline. Bandura (1986) concludes that especially in the domain of ageing, there should be a commitment of collective effort rather than litanies about powerlessness that instill in people beliefs of inefficacy to influence conditions that shape their lives. Also relevant in the present context is the finding of Berry and West (1993) that whereas in empirical studies on personal mastery and goal setting among younger age groups, achievement abilities have been the primary focus of self-efficacy analyses, the focus among older adults has been almost exclusively on more generalised indices of memory and intelligence. Self-efficacy, in our view, is a potentially very useful concept, especially in relation to ageing and adaptation, that not only influences situational appraisals concerning the possibility and feasibility of various coping strategies (secondary appraisal), but perceptions of threat or challenge and motivation to expend effort and to attain the goal in the process as well (primary appraisal).

One or two types of control

According to Festinger (1957), if people perceive that they are in control of the environment, they will choose an active, environmental adaptation strategy, otherwise they will adapt psychologically. The view of Lazarus and Folkman (1984b) is very similar: they argue that emotion-focused coping is more likely when individuals appraise that nothing can be done to modify harmful, threatening conditions; problem-focused coping on the other hand, is more likely when they appraise conditions as amenable to change. In other words, they conceptualize one (major) type of perceived control, relating to problem-focused coping strategies. A different view is held by McCarthy and Newcomb (1992), who report two dimensions of self-efficacy: cognitive control and behavioural coping ability. Based on findings of an empirical study, these two types of control are said to each facilitate a different type of coping: emotion-focused and problem-focused respectively. However, some of the measures these researchers used do not really represent measures of perceived control abilities - e.g. depression scales or a purpose in life scale - while the others do not really represent emotion-focused coping (e.g. perceived loss of control or social impact efficacy). Heckhausen and Schulz (1993) share this view of two types of control, although the names they chose for the two coping concepts, primary and secondary control, are misleading, because they refer to consequences of control (i.e. actual coping behaviour) rather than to perceived control (Skinner, 1996). It seems especially misleading to use the term “secondary control” to refer to accommodative or emotion-focused coping.

Brandtstädter and Renner (1990; Brandtstädter, 1992) adhere to the concept of one type of perceived control and argue that the accommodative mode of coping should be considered as a neutralization rather than as an active solution of the problem. Accommodative tendencies are activated to the extent that active, assimilative attempts to change the situation become, or are perceived as, ineffective and should not be considered the result of a deliberate choice of free will. They refute the idea of two types of control and actually based their definition of the two types of coping on the distinction between coping strategies that are under the control of the person (assimilation) and those that are not (accommodation). This points out the (modest) difference between their categorization and the one by Lazarus and Folkman (1984b), who state that most of the emotion-focused strategies are not under the control of the person. In fact some are even inherently unconscious, but also acknowledge the existence of beliefs in one’s ability to control one’s reactions: “the person, not knowing or fearful that not much or anything can be done to alter the harmful environmental factors ..., can still fall back on the belief to exert control over feelings, public and private, and the ability to take whatever comes and keep up morale and a reason for living” (p.71). These latter appraisals, by the way, seem

to fit in nicely with Brandtstädter and Renner's concept of flexibility, which will be discussed in section 2.4.

The issue of one versus two types of control is an important point of discussion. Still, recent research seems to converge to the conceptualization of one type of perceived control. After reviewing numerous studies, Skinner (1996) concludes:

> "To date, there is simply no evidence that this set of [accommodative] processes is regulated in any way by objective or subjective control. In fact, the few studies that have directly assessed the relations between perceived control and secondary control have shown that secondary 'control' reactions are outside the direct effects of perceived control" (p.557).

However, although only one type of perceived control is thought to influence coping behaviour, both types of coping, problem-focused or assimilative and emotion-focused or accommodative, may result in feelings of experienced control: the person has managed to tackle the problem (Brandtstädter & Renner, 1990; Rothbaum, Weisz, & Snyder, 1982). In addition, research has shown that decreases in perceptions of control in a particular goal domain affect general perceptions of control to a smaller degree if the importance of that domain is low or is down scaled parallel to the process of loss of control (Brandtstädter & Rothermund, 1994; Brandtstädter, Wentura, & Greve, 1993).

In conclusion, competence and, more importantly, perceived control are important concepts within the framework of this study. Competence, as we have formulated it, is a very broad term referring to many different characteristics of a person and his or her environment. Relevant aspects include physical and cognitive performance level and social and material resources. However, the possible impact of these concepts in our frame of reference must not be overestimated. Most of the problems we are dealing with are not too complex in the sense that people's cognitive competence generally will be sufficient to think of possible solutions. Also, although decreasing health may be the cause of many problems for older persons, its influence on the coping process itself may be limited (Lazarus & Folkman, 1984b).

Control (or rather perceived control) is an important concept, not only influencing secondary appraisal, but primary appraisal as well. More on this second issue will be discussed in the following section. Unfortunately however, the various definitions and operationalizations of control that have been used in earlier research complicate our understanding of the process and predictions about its precise influence. Additional research is needed to determine the most optimal type of control to be used in our studies. We expect that more specific, situationally determined concepts, like for instance Bandura's concept of self-efficacy will have the most significant role.

A final issue we would like to mention here is that self-efficacy and control are as much input variables in the coping process as outcome variables: feelings of competence and control are the result of successful (not necessarily assimilative) adaptation processes. This only

emphasizes the relevance of these concepts in the present research.

2.3 Motivational issues; Needs and Goals

Motivation, needs and goals are important concepts when studying what makes people engage in purposeful adaptive behaviour. People have basic needs and values. An example of an early general motivational theory is that of Maslow (1954), whose conceptualization was based on a hierarchical organization of biological drives and psychological needs. More recent theories generally focus on psychological needs, as for instance Deci and Ryan's (1985) self-determination theory. The theory posits that individuals have three basic psychological needs: autonomy, relatedness, and competence. This conceptualization is very close to the findings in a study by Holahan (1988), specifically focusing on needs in relation to ageing, who found autonomy, involvement, and achievement motivation to be the most important needs among a sample of older men and women.

Goals are the link between values and needs on the one hand and action on the other, in that they are applications of values (which are general) to specific situations (Locke & Kristof, 1996). When people experience a discrepancy between an actual and a desired state or situation, this means that they have certain goals they want to attain. This discrepancy can have a motivating effect, which will give the individual energy to try to attain the goal.

There is a contemporary emphasis in psychology on maintaining goals in adult life and how this relates to life satisfaction and well-being (Deci, 1980; Holahan, 1988; Rapkin & Fischer, 1992). It is generally assumed that in the face of growing limitations in various domains of functioning, there is a shift in personal goals of older adults. Individuals are thought to revise or give up goals when faced with difficulties (Baltes & Baltes, 1990; Brandtstädter & Rothermund, 1994; Heckhausen & Schulz, 1993; Rapkin & Fischer, 1992). However, as was discussed earlier, modifying goals is but one response available to older adults. The range of coping strategies spans problem-focused, goal-directed ones to emotion-focused, goal-accommodative ones.

According to the model of successful ageing (Baltes & Baltes, 1990), individuals should pursue the goals that are most central and important to them and release other, less important ones, when the energy or resources to achieve them are lacking. Brandtstädter et al. (1993) also argue that disengagement from goals that are central to the individual is more difficult. Thus we could argue that first goals give direction to behaviour and that subsequently goal importance (or centrality) determines its motivating potential.

Centrality or importance of a goal should therefore be a motivator of goal-directed adaptations, just as perceived control and self-efficacy are hypothesized to be, according to cognitive theories of motivation. Bandura (1986) argues that self-efficacy is closely related to motivation and goal-setting, most importantly people with higher self-efficacy choose higher goals and are more committed to their goals. It still is unclear whether and how the motivating effects of self-efficacy and centrality of goals interact in coping behaviour. In one study, Parkes (1984) investigated the interactions between locus of control, appraisals of controllability, importance of the episode, and coping strategies. She found no interactions between importance and the other variables, only a significant direct negative correlation between importance and the use of "suppression" as a coping strategy. However, the variables were only measured, not manipulated, and the data were retrospective.

It is clear that goals influence behaviour and that the centrality of goals is related to people's motivation to persist in the face of difficulties with the attainment of these goals. Lazarus and Folkman (1984b) refer to this process as 'commitment'. People are more committed to goals that are more central to them. This is especially relevant in view of primary appraisal, where people evaluate what is at stake for them. Here, commitment can influence the process in two directions. When commitment is higher, the person is more likely to perceive the situation as a threat than as a challenge, but the person is also more motivated to draw on available resources, be more tenacious. In addition, goals and personal aspirations can change as a result of adaptation processes. This implies that when studying the process of adaptation, personal goals and needs should certainly be regarded. They are also important in view of the more general concept of life satisfaction, since personal goals are a critical aspect of the frame of reference older adults use to evaluate their lives (Brandtstädter & Renner, 1990; Rapkin & Fischer, 1992).

2.4 Personal Dispositions

A third category of possible important determinants of adaptive behaviour refers to personal dispositions. Brandtstädter (1992) argues that besides self-perceptions of efficacy, the capability or readiness to disengage from blocked developmental options and to flexibly readjust one's developmental goals is an important factor that reduces the risk of dissatisfaction and depression in later life. Flexible persons may feel more strongly than others that they have the ability to take whatever comes and to keep up morale and a reason for living. This capability or readiness, or in other words *flexibility* is a disposition individuals possess while simultaneously they may or may not possess the disposition *tenacity*. Tenacity refers to the persistence or perseverance with which people cling to their goals, even in the

face of obstacles or high chances of failure. It is likely that tenacious persons are more prone to perceive complex situations as challenges than as threats, which makes them more confident, less emotionally overwhelmed and more willing or capable of drawing on available resources.

Tenacity and flexibility are dispositions that are related to the two basic coping strategies assimilation and accommodation, according to Brandtstädter et al. (1993). Tenacity is related to instrumental activities, aimed at preventing or alleviating developmental losses in domains that are relevant to the individual's self-esteem and identity (assimilation); flexibility is related to accommodative processes by which personal goals and frames of self-evaluation are adjusted to changes in action resources and functional capacities.

Brandtstädter and Renner (1990) posited a general model of coping that describes how the two modes of coping are actually two successive phases in a process that is influenced and moderated by emotions, cognitive appraisals, and control beliefs. In the initial stage of a coping episode, assimilative tendencies dominate (tenacity disposition); accommodative tendencies (flexibility disposition) are activated to the extent that active, assimilative attempts to change the situation become or are perceived as ineffective. The latter might for instance be the case when self-efficacy regarding the assimilative strategy is low. Therefore, it is important to study both self-efficacy and the dispositions tenacity and flexibility simultaneously when investigating older people's adaptive behaviour in the face of problems.

It must be stated explicitly that this model of two personal dispositions and specifically the two successive phases in which they operated has not been tested regarding its validity for predicting actual adaptive behaviour. The scales used by Brandtstädter and Renner (1990) measure individuals' personal perceptions of the coping strategies they generally use, rather than actual stability or change in goal content or the process of these tendencies in specific coping episodes. Both scales correlate with general indicators of successful development such as life satisfaction and absence of depression. Therefore, these concepts may prove to have significant predictive value when studying concrete coping episodes. We must, however, remember that, although it is legitimate and useful to assess stable patterns of emotion and coping, they only constitute a part of the total picture (Folkman & Lazarus, 1990). Other, more situationally or interactionally determined factors should also be incorporated in present research.

2.5 Conclusions

In the preceding sections several possible determinants of adaptive behaviour have been discussed: competence and perceived control, motivation and goals, and personal dispositions. Although most of these issues have implications for coping and adaptation in general, the major focus has been on concepts that seem most relevant in relation to the ageing individual. An effort was made to make plausible the important influence of each of these concepts on

adaptive behaviour. However, the concepts stem from different theoretical domains and have seldom been studied in relation to each other. Also, several questions and points of discussion have been raised. Some descriptive characteristics of the most relevant theories are summarized in Table 2.1.

Table 2.1
Characteristics of relevant theories on adaptation

	Lawton & Nahemow (1973)	**Lazarus & Folkman (1984)**	**Brandtstädter & Renner (1990)**	**Baltes & Baltes (1990)**
coping / adaptation strategies	proactivity vs docility	problem-focused vs emotion-focused	assimilation vs accommodation	selective optimization vs compensation
type of theory	descriptive	descriptive	descriptive	normative
empirical support	general support	strong	modest	indirect support
focus on ageing	yes	no	yes	yes
relevant personal factors	motor, biological, cognitive and perceptual competence	commitments and beliefs, specifically existential and control-related	perceived control, tenacity, flexibility, importance of goals	reserve capacities (physical, mental, social)
relevant situational factors	level of 'press' in the environment	novelty, predictability, ambiguity, & temporal factors	resources for action, palliative interpretations	societal opportunities and supports
problem type /domain	press outside 'adaptation level' experienced in interaction with the physical environment	psychological stress in the relationship between person and social environment	developmental change causing gains and losses in various life domains	life development as specialized and age-graded adaptation, age related losses

In section 2.2, concepts related to competence and perceived control were discussed. Reduced physical competence, besides being a possible cause of stressful situations, might influence the coping process by decreasing the general level of energy people can expend or

by hindering certain actions. Cognitive competence and problem-solving skills can limit the complexity of situations people can deal with. In addition, social and material resources can also raise individuals' competence: they provide them with tools and a broader range of options to choose from and bring certain options within easier reach. However, within the framework of adaption by independently living older persons, we expect that the role of these constructs is limited and that perceived control is more significant. The numerous different definitions and operationalizations of this construct in earlier research complicate our understanding of the process and predictions about its precise influence. Based on the discussion that was presented earlier, we expect that the study of concrete adaptive behaviour is best suited to the use of a more specific and situationally determined concept like self-efficacy, rather than to the use of a trait-like concept such as locus of control. The most important reason for this is that the role of more general dispositions and beliefs is most valid in situations of high ambiguity, whereas the focus of the present study is on more clearly defined situations with concrete and imageable options and consequences. Here, the concept of self-efficacy, which takes into account the specific circumstances and beliefs, is likely to provide more insight. In addition, only self-efficacy can account for (a part of) the considerable intra-individual differences in adaptive behaviour that exist.

The most important issue regarding motivational aspects in this context is whether older people engage in the strategies described by Baltes and Baltes (1990) or by Brandtstädter and Renner (1990, Brandtstädter et al., 1993) in real life. Do people choose their coping strategies differently, depending on the centrality of the respective goals or behaviours, do they successfully balance their means, energy, and capacities? This would imply that adaptive strategies vary significantly, not only between, but also within older individuals, reflecting the variance in importance of goals.

The question also remains whether personal dispositions can account for a significant amount of variance when studying adaptive behaviour, not on a general macro-level, but on the level of concrete problem solving processes. In 1986, Folkman, Lazarus, Dunkel-Schetter, DeLongis, and Gruen argued that a separate body of research was appearing, characterized by an interest in the actual coping processes that people use to manage the demands of stressful events, as distinct from trait-oriented research, which focuses on personality dispositions from which coping processes are usually inferred, but not actually studied. The trait-oriented approach assumes that coping is primarily a characteristic of the person, and variations in the stressful situation are of little importance. In contrast, the context is critical in the process-oriented approach because coping is assessed as a response to the psychological and

environmental demands of specific stressful encounters. Although Brandtstädter and Renner's (1990) theory combines both stable (personal dispositions) and situational or problem-specific concepts (perceived control, centrality of the behaviour), it has only been used to explain general, stable patterns of adaptation. How useful this theory is in predicting outcomes of concrete adaptation processes is still unknown.

Lastly, the relative importance of these various concepts and possible interacting effects remains obscure. For instance, since self-efficacy can exert its influence via both primary and secondary appraisal, some questions remain concerning possible interactions with other determinants of adaptation. Self-efficacy was said to tie into goal-setting theory in numerous ways (Bandura, 1986; Locke & Kristof, 1996). Higher levels of self-efficacy may make persons formulate higher goals for themselves and strengthen their motivation. More control may make the person perceive the stressful situation more as a challenge than a threat, changing the emotional impact of the stressful situation and the willingness and ability to invest energy and other resources in attaining the desired goal. Schwarzer and Fuchs (1995) mainly conceptualize the role of self-efficacy in the motivation - intention - behaviour chain in the second phase, i.e. the volition process (Gollwitzer, 1993), where self-efficacy first influences the number and quality of action plans and subsequently the amount of effort that is invested and the level of persistence. But not only can self-efficacy influence motivation, there also is a possible interaction with personal dispositions. Accommodation, a strategy related to the flexibility disposition, only occurs when attempts to assimilate are frustrated, for instance due to low perceived control or self-efficacy, and this is more likely for problems to which the individual is less committed.

It is clear that the issues we are dealing with here are too complex to understand from one single viewpoint (be it motivational, cognitive, or social). For this reason, an attempt at integration, like that of Connell and Wellborn (1990), seems warranted, even though combining these various concepts may pose serious challenges. From the previous sections, in which theories were discussed from fields of gerontology, social and cognitive psychology, and environment-behaviour studies, it is already clear that several comparable theories often coexist, without any detectable cross-pollination. Confusion, raised by the use of different terms for similar concepts and vice versa, only complicates this process. In the remainder of this dissertation, we will strive towards an integration of these concepts, building on theoretical views from the diverse fields and empirical findings in real-life problem-solving behaviour.

2.5.1 Towards an integrative model of adaptive behaviour

As was mentioned earlier, the various theories on adaptation that were discussed in the previous sections share important characteristics and ideas. Especially regarding the dual-process approach, similarities of the theories are more prevalent than discrepancies. Although

the ideas of Folkman and Lazarus (1980, 1990), in which the difference between problem-focused and emotion-focused strategies is applied, probably are the most widely supported ones, especially in psychological domains, we have decided to mainly build this research on the coping model that was proposed by Brandtstädter en Renner (1990) for two reasons. Firstly, the focus of this model is more clearly geared towards the ageing individual and the difference between assimilative and accommodative strategies, based on whether the adaptation is goal-directed or involves accommodation of goals, seems highly relevant for studying the adaptive behaviour of older persons. Secondly, the theory combines stable and process-oriented, and problem-specific concepts. Besides the role of personal dispositions, resources, and concepts related to (perceived) control and motivation (goals and needs) are believed to play a role in adaptation and give rise to the idea of the person as an active agent in this process.

Possible determinants

We set out to study adaptive behaviour of older persons on the level of concrete problem-solving processes. The model of Brandtstädter en Renner (1990) has not been used on this level before and whether the personal dispositions have predictive validity here remains to be seen. However, we expect that the role they play is similar to what we described earlier for adaptive behaviour on a more macro-level. *Tenacity* is expected to be related to the use of assimilative strategies, which in our study involves the use and implementation of technical solutions. *Flexibility* is expected to be related to accommodative strategies.

Since we are studying adaptive behaviour on the level of concrete problem-solving processes, it follows that we apply a measure of perceived control that is congruent with this approach. Locus of control is a concept that should be located at a more general and even trait-like level. In contrast, Bandura's (1986) *self-efficacy* is often conceptualized on the level of actions and behaviours and is situation-specific. In addition, the theory naturally connects with Brandtstädter and Renner's (1990) model. Hence we have chosen this concept to account for the role of perceived control in our study.

The motivational aspects in adaptive behaviour are quite complex and intertwined with control-related issues. It is fairly obvious that goals and needs give rise to motivation. However, earlier we discussed how perceived control is also said to have motivating potential. The idea is that individuals who believe they have more control are more likely to engage

actively, whereas those who feel powerless are more likely to be disaffected (Connell & Wellborn, 1990; Skinner 1992). *Goal importance* also has motivating potential and hence increases engagement. Engagement is hypothesized to be related to assimilative strategies and disaffection to accommodative strategies.

Appraisal processes

In trying to combine the concepts of competence, perceived control, personal dispositions and centrality or importance of the goal in one model, we see ourselves faced with a difficult task. Since these concepts have only seldom been studied simultaneously, no strong conclusions can be drawn regarding their relative importance and interactions. We could, however, try to structure the process in parallel to Folkman and Lazarus (1990) and use the mediating concepts of primary and secondary appraisal.

Within the category of primary appraisals, judgments are made regarding the importance of the threatened activity, the urgency of the stressful situation, and whether it takes the form of threat, harm or loss, or challenge. Goals are set here and the result of these appraisals is the amount of engagement or motivation with which the person will engage in the remainder of the adaptation process. Goals and needs of the individual and their relative importance or centrality, the dispositions tenacity and flexibility, and the perceptions of control exert their influence on the adaptation process via primary appraisal.

Secondary appraisals consist of judgments concerning what might and can be done. These appraisals are influenced by the perception of possible options, the availability of various types of resources: personal (physical competence, psychological beliefs, and cognitive competence) and environmental (social support and material resources), and perceptions of control (self-efficacy) of the required actions. The feasibility of all options is determined as are their consequences and outcomes (response efficacies). Finally, feasibility and complexity and the pros and cons of every option are weighed using the primary appraisal and the individual chooses the optimal adaptive strategy.

Primary and secondary appraisals both enter into the person’s total evaluation of a situation: it is the evaluated relationship between these appraisals that determines coping (Lazarus & Folkman, 1984b). When engagement is high - a central goal is at stake, the person is highly tenacious and high feelings of control make persons set their goals high - issues of complexity and feasibility are hypothesized to receive relatively low weights, and pros and cons gain importance. The person is more strongly set on attaining the optimal goal and more willing to invest time and effort in the process. This will likely result in a choice for an assimilative adaptation. When engagement is low, the weight of issues regarding complexity and feasibility increases and the person is more likely to choose a less optimal option, saving time and energy for more important things. Accommodative adaptations (usually not requiring much physical or cognitive effort, but with less favourable consequences) come into view.

In conclusion, we have purposefully tried to combine views from different theoretical domains to capture the complexity of the issues at hand. From an ecological viewpoint, we will try to choose methodologies that incorporate the various aspects of the problem and stay as close to reality as possible. In this decision we were motivated by the observation that, especially in ageing studies, macro-level, theoretical, and often normative approaches seem to be standard. In contrast with studies with younger age groups, competence is often defined in rather strict terms, referring only to ADL performance or intelligence and memory skills. In addition, we clearly have not chosen for a developmental approach, building on differences between age groups or changes with age. It is our view that a study within the older age group can render important findings, shedding new light on possible reasons for some of the differences between those who are ageing successfully and those who are not. In discussing the types of research in the domain of ageing and social cognition that need to be addressed in future, Blanchard-Fields & Abeles (1996) also state that an individual differences approach promises to advance the field by acknowledging that the association of age with social cognitive functioning can be influenced and even moderated by a host of relevant variables. Research findings highlighting which determinants contribute to successful adaptation are bound to give more theoretical insight and directions for policy and practice than additional studies showing relationships between ageing and behaviour, without explaining the roles of the conditioning mediating variables. Finally, in line with the ideas of Lazarus and Folkman (1984b), who state that "in seeking to understand coping or its antecedent and consequent correlates there is no substitute for direct assessment of coping acts and how they change with the changing demands of the situations as these are appraise by the person" (p. 130), we will choose a concrete-level and process-oriented approach.

Realizing that after discussing these various theories and conceptualizations confusion probably exists regarding their specific meaning in this dissertation, definitions of the most relevant concepts are listed in Table 2.2.

Table 2.2
Definitions of the most relevant concepts

Adaptation / Coping	the dynamic process of minimizing the discrepancy between an actual and a desired state or situation the complexity of this process makes it bear many aspects of problem solving in a personally meaningful context within the present framework, the focus is on situations in which a problem exists due to changes in an individual's life competence or perceptions, which hinders or prevents this person from performing certain actions in the home and, through this, from attaining a certain goal various adaptive strategies can be called upon to re-establish the fit between person and environment, ranging from assimilative to accommodative
Assimilation	coping mechanism involving active modification of the environment in the service of ongoing goal attainment; instrumental activities, aimed at preventing or alleviating developmental losses in domains that are relevant to the individual's self-esteem and identity (Brandtstädter and Renner, 1990)
Accommodation	coping mechanism involving accommodation of goals to losses and obstacles; personal goals and frames of self-evaluation are adjusted to changes in action resources and functional capacities (Brandtstädter and Renner, 1990)
Competence	adaptive cognitive, emotional, behavioural, social, and environmental attributes and resources, giving the individual the capacity to interact effectively with the environment; it is conceptualized as a transactional characteristic
Self-efficacy	people's judgments of their capabilities to organize and execute the courses of action required to attain designated types of performances (Bandura, 1986). it is conceptualized as a transactional characteristic, referring to specific assimilative strategies
Response efficacy	people's judgments of the effectiveness of certain actions or strategies to attain certain goals (means-ends beliefs) regardless of the question whether one is able to perform these actions. the concept is somewhat similar to for instance the attitude component in the theory of planned behaviour
Tenacity	the persistence or perseverance with which people cling to their goals, even in the face of obstacles or high chances of failure; it is conceptualized as a relatively stable, personal characteristic
Flexibility	the capability or readiness to disengage from blocked developmental options and to flexibly readjust one's developmental goals; it is conceptualized as a relatively stable, personal characteristic

PART TWO

EXPLORING ADAPTIVE PROBLEM SOLVING

*In the first survey we will explore the role of problem type (related to **goal importance**) and the various indicators of **competence** (personal, social, and environmental) as predictors of **adaptive behaviour**. Adaptive behaviour will be characterized in terms of assimilation versus accommodation and in terms of the object that is adapted. Furthermore, we will look closely at the actual **adaptation process** and at older persons' evaluations - in terms of satisfaction and perceived effectiveness - of the adaptive strategies they chose.*

*In the second survey we will explore the roles of the **attitude** and **self-efficacy** of older persons regarding certain behaviours that are relevant for independent living in predicting the **intention** to engage in these behaviours and subsequently the actual frequency of performing the **behaviours.***

CHAPTER THREE

PREDICTORS OF ADAPTIVE PROBLEM SOLVING[1]

In the introductory chapter we stated that the central issue of this dissertation was independent living for ageing persons, with a focus on the role of the older individual as an active agent. The issue is addressed from an adaptational viewpoint. In Chapter two the theoretical foundations for this study were laid. A rather complex picture emerged. One problem is that for many concepts, more than one or two definitions exist and operationalizations often vary from study to study. Another problem is that because concepts have been drawn from different theoretical domains, several factors have not been studied in relation to each other, which makes it hard to draw conclusions on their relative importance.

Besides these theoretically based questions, more practically oriented considerations also constituted part of the motivation for the present research. We specifically focus on the use and implementation of technical, goal-directed solutions for problems encountered in the home environment, or rather, in the reasons for disuse. Designers of these solutions do not have a clear picture of the particular problems older individuals are faced with in their homes and know even less about how these are solved in everyday life. More insight into these matters could enable designers to structure both designs and design processes more carefully.

These various considerations led to the conclusion that a broad and rather explorative study was needed as an empirical start for this project. The present chapter reports on a survey, in which actual concrete problem solving of independently living older people is studied, taking personal, social, and environmental factors into account. Through the analysis of actual problem-solving behaviour we expect to get a pronounced and explicit view of adaptational aspects of ageing and independent living. Discussing actual problem-solving processes within their context in an open fashion is very much in line with the ecological approach we embrace.

[1] Adapted from Slangen - de Kort, Midden, & van Wagenberg (1998). An additional part was published as a book chapter (Slangen - de Kort, van Wagenberg, & Midden, 1998).

3.1 Purpose and Rationale

The general purpose of the present research is to describe the problem-solving behaviour of older people in their homes and to find important factors that influence this adaptive problem solving process, especially factors that might increase proactivity and assimilation. The research is focused on problems that occur in the home, due to decreasing health or strength. These problems can exist in various domains of functioning and consequently hinder goals to which persons are committed in various degrees. We will analyse the subject in terms of four interrelated issues:

1. The influence of the type of problem on the choice of adaptive strategies.
2. The (relative) influence of 'coping resources' (personal, social, and environmental, as indicators of competence in its broadest sense) on the choice of adaptive strategies.
3. The description of the adaptation process as a problem-solving process, in terms of involvement of the person and others in the subsequent phases, as a function of the type of problem.
4. The evaluation of the outcome of the adaptive process: satisfaction with and perceived effectiveness of the adaptive strategies.

Categorization of adaptive strategies

Adaptive behaviour can be categorized as assimilative versus accommodative (Brandtstädter & Renner, 1990). The insight that is provided by this dual-category classification, however, is limited. A more detailed categorization might render a deeper understanding of coping behaviour in this respect. For instance, a distinction between adaptations could be made using the object that is adapted: the physical environment (technical solution), the social environment (receiving help), or the person him- or herself. Within all of these categories, it is possible to define moderately to highly assimilative solution alternatives, even though they are fundamentally different.

Adaptations of the physical environment are generally considered assimilative or goal-directed. Adaptations in the social category are especially interesting because despite the fact they might clearly be problem-focused, they almost always imply (partly) giving up a goal that is relevant to many people: independence or autonomy, and sometimes privacy as well. Purely accommodative strategies are most likely to fall into the category of personal adaptations. In light of the specific type of problems we are investigating, this three-type categorization can be refined even further, as is visualized schematically in Figure 3.1.

general ⬅	**Categorization** ➡	**detailed**	
adaptation of the physical environment	adaptation of the physical environment	modification of the home	**purely assimilative**
		use of assistive device	
adaptation of the social environment	formal help	formal care/meals on wheels	
		paid housekeeping	
	informal help	help from children or friends	
personal adaptation	change of behaviour of person or partner	help from partner	
		change of behaviour	
	accommodation	no solution, problem persists	**purely accommodative**
		give up behaviour	

Figure 3.1: Categorization of adaptive strategies

Starting in the left-hand column, the first category encompasses adaptations of the physical environment, which include modifications to the house and the use of assistive devices. The second category encompasses all the help received from people via the informal and formal social network. Formal help includes help received from the various types of formal care providers, meals on wheels, and paid housekeeping or in other words, help that can be hired. The third category, personal solutions, can be divided into two types. The first type of adaptive behaviour is active and goal-directed: people change their own (or their partners') behaviour in the service of ongoing goal attainment. Solutions where persons receive help from their partner are placed in the third category instead of the second, because in the present survey a couple was regarded much more as one entity than as two individuals. The second type of personal adaptive strategy is passive and not goal-directed (accommodative coping); the problem is not solved: either it persists or the behaviour (goal) is abandoned. It should be noted that these two ways of accommodating are very different.

Expectations

Based on earlier findings that were discussed in Part One of this dissertation, a number of expectations and hypotheses can be formulated regarding the role of the various factors. The first factor is the type of problem, which, via primary appraisal, has strong implications for the type of solution. Depending on the specific actions or goals that are hindered, the person will be more committed or less committed to solving the problem proactively. We expect adaptive strategies to be more assimilative for goals that are more central to the older person. In the present study it would stretch too far to try to incorporate all possibly relevant needs and

goals. We therefore constructed a list of eleven goals that could be relevant to older persons with regard to housing, based on a list of twelve general environment and behaviour principles for housing for the elderly that was formulated after an extensive literature review (Regnier & Pynoos, 1987, Regnier, 1993). The list was slightly adapted, because some principles were only appropriate for persons living in institutional settings.

Coping resources, mainly exerting their influence via secondary appraisal, were categorized into three classes: personal, social, and environmental resources. These resources were used as indicators of competence in its broadest sense. The first category - personal resources - consists of physical health, problem-solving competence, and psychological resources. Health not only influences the number, severity, and type of problems, but could also slightly influence the coping process itself due to a decreasing level of energy the individual can expend. In addition, although problems are not expected to be highly complex, problem-solving skills might help the individual analyse situations more thoroughly and think of more suitable assimilative coping strategies. In this survey, education level and a score on a knowledge test (with questions relevant for this problem domain, especially regarding technical solutions) were used as an indicator of problem-solving competence. We also incorporated the individual's financial situation in this category. With more money available to them, people may perceive certain technical adaptations as more realistic.

Social contacts may be an important source of instrumental support, information, or advice (Willis, 1996). Individuals with better social networks are hypothesized to be more successful in choosing and implementing assimilative coping strategies, since they can call in the help of others in the problem-solving process, so that both social and technical adaptations are within better reach. The quality of the social network is measured in terms of the number and type of social contacts of the individual.

The physical environment is important in defining the problem, but also in facilitating or hindering problem solutions. The environmental resources that are most relevant within the framework of this study are the characteristics of the home. Its quality was measured in terms of adaptability and adaptedness. On the one hand, the quality of the home is expected to influence the number, severity, and type of problems, since it is the interaction between the ageing individual and his/her environment that generates the problems. However, the physical environment also offers possibilities as well as restrictions regarding adaptation strategies and by this process influences adaptive behaviour. Adaptability seems most relevant here, especially with regard to the technical assimilative strategies, since adaptable houses afford more, easier, and cheaper modifications than less adaptable ones.

In general, we expect that the type of problem influences the coping process via primary appraisal. The various personal, social, and environmental resources mainly exert their

influence on this process via secondary appraisal. Education, a healthy financial situation, technical knowledge, social contacts, and adaptability of the home are all hypothesized to be positively related to the availability and feasibility of assimilative strategies. However, few statements can be made about their relative importance in this respect.

Besides investigating the influence of problem type and various coping resources on the adaptational outcome, a second goal of the survey was to gain insight into the problem-solving process itself, i.e. the various phases in this process and the involvement of others in the successive phases. The findings might also differ for the various types of problems: for instance, involvement in the process is likely to reflect a commitment to the specific goal.

3.2 Method

3.2.1 Participants

A sample of 112 respondents, ages ranging between 63 and 93 years old, participated in the study (26 male, 86 female). They all lived independently, alone or with a spouse, in bigger or smaller cities in the south of the Netherlands. Participants were recruited at random. To guarantee a representative composition of the sample of the general older population and to prevent exclusion of less active or assertive persons, participants were contacted and interviewed in their own home. The interviewers were instructed to visit several neighbourhoods with different characteristics and diverse types of housing, in which they looked for people older than 65. A maximum of one household per street was interviewed. Approximately 55% of the respondents lived alone, the others lived with their spouse. The composition of the sample was checked with general Dutch figures with regard to the education level, living and housing situation (Timmermans, 1993). We consider it representative for the Dutch older population, although the proportion of female respondents was relatively high. The data in Table 3.1 show that relatively a larger number of the older women live alone.

3.2.2 Data collection

The research consisted of an interview with the respondent, a questionnaire filled out by the respondent and, in the case of a two-person household, the partner, and lastly a checklist on housing characteristics. The survey was carried out by nine trained interviewers, who were students with interviewing experience. Every visit started with an interview that consisted of both closed and open-ended questions. At the end of the interview, the respondents and, if possible, their partners filled out a questionnaire that mainly consisted of multiple-choice questions. Finally, the interviewer noted the home inventory. This concluded the visit, which took 1.5 to 2 hours on average.

Table 3.1
Descriptive variables of persons in sample by gender

	Female	Male	All
Mean age	75.5	77.4	76.0
Total number	86	26	112
Living alone	50	12	62 (55%)
Living with partner	36	14	50 (45%)

Three different methods (interview, questionnaire, and checklist) were used to measure the various variables, to obtain reliable data in an efficient manner. Besides variables describing the adaptation process - problem type, solution, involvement of others - and its outcome - perceived effectiveness of the solution, satisfaction - indicators of the three types of coping resources were measured: personal resources (age, health, education level, practical knowledge, financial situation), social resources (social network), and environmental resources (characteristics of home). A summary of the variables in this survey is listed in Table 3.2. The measurements will be discussed below, in chronological order.

Interview

The interview started with a list of eleven goals related to the home, based on a list of environment and behaviour principles relevant for housing for the elderly (Regnier, 1993): safety, accessibility, ease of use, control, aesthetics, autonomy, self worth, social contacts, privacy, stimulation, and personality. Respondents were asked to score these goals on a 4-point scale (0 = not important, 3 = very important), rating their importance. The goals were written on eleven separate cards, each with a short statement, illustrating the meaning of the concept, and given to the respondent in random order.

Then a 19-item somatic complaints list (17-item list of Klerk & Huijsman (1992) with two extra items: forgetfulness and fatigue) was filled out. Respondents reported the degree of every complaint on a 4-point scale (0 = not at all, 3 = quite a lot). These scores were all summed and, to make interpretations easier, the total health score was later inverted, so that higher scores were related to better health.

Table 3.2
Summary of variables in the study

Predictors		**Adaptation**	
problem characteristics		*adaptation process*	
problem type	I	involvement of person in every phase	I
goal importance	I	involvement of others in every phase	I
competence / coping resources			
age	Q	*adaptation outcome*	
gender	Q	type of adaptative strategy	I
health	I		
education level	Q		
knowledge	Q	**Evaluation**	
financial resources	Q	*evaluation*	
social network size	I	satisfaction with solution	I
social network type	I	effectiveness of slution	I
adaptednes of the house	C		
adaptability of the house	C		

Note. The characters ‘I’, ‘Q’, and ‘C’ indicate whether the variables were measured in the interview, questionnaire, or checklist respectively.

Prompted by the answers to the medical inventory, respondents then reported all problems that (had) existed in their homes due to these infirmities, whether these had already been solved or not. Type and (if relevant) place of occurrence were noted. After the interviewers had recorded every problem, they showed the respondents a list of possible types of problems, to help remind them of possible other problems that had occurred. If the respondent remembered some more problems, these were also noted. The problems were categorized after the survey.

Then one to three problems were discussed in more detail (three were used unless the respondent had only mentioned one or two problems in the earlier question). A rather non-directed approach to exploring individuals’ problem-solving behaviour was chosen. We assumed that if individuals were free to choose the problems they described and assessed we would be more likely to get a sense of what has prominence in their perceptions. We thus employed a fairly open-ended method. For different phases in the problem-solving process, the involvement of the respondent and others in the social network was recorded, ranked according to the type of person and the problem-solving phase. These phases were chosen in parallel with the general design cycle. The first phase incorporated problem recognition and analysis of the situation. In the second phase, people think about various possible solutions and weigh the alternatives. The third and fourth phase consist of the planning and

implementation of a specific solution. Formally, these should be followed by a fifth phase: the evaluation of the solution. We therefore asked respondents to score the solutions to their problems on a 5-point satisfaction scale (0 = not satisfied, 4 = very satisfied) and effectiveness scale (0 = not effective, 4 = very effective).

In the last part of the interview the number, type, and frequency of contact with people in their social network were recorded. Subjects reported the number of relationships of a certain type (partner, son, daughter, brother, sister, other family members, friends, and neighbours) as well as the frequency of visiting and calling (6 = daily, 5 = several times a week, 4 = every week, 3 = every month, 2 = every six months, 1 = less). Frequency of contact with professional care providers was also reported. Two different indicators of the social network were computed from these scores. The first indicator, network size, was determined by summing all the people respondents mentioned. The second indicator, network type, was measured on a 4-point scale (0 to 3). Every point indicated that the respondent had fairly intensive contact (at least every month), with people in one of the three following categories: children, other relatives, and friends.

Questionnaire

The questionnaire addressed several topics. It included measurements of personal resources: education level (4-point scale), domain-relevant knowledge, and financial situation. Knowledge level was measured by a 16-item multiple choice test that was developed to evaluate basic knowledge of building practice, building procedures, and special modifications for senior citizens. The respondent's perception of their financial situation was measured with two 4-point items (ranging 1 to 4). The scores on the two items were summed (Cronbach's alpha = .65).

Checklist

The inventory on characteristics of the home is based on the Senior Citizen Label [Senioren label] (Scherpenisse, Folgerts, & Kalle (Eds.), 1993; Stuurgroep Experimenten Volkshuisvesting (SEV), 1994). This consumer quality certificate for housing for the elderly, developed by the SEV (steering committee for experiments in public housing) in cooperation with the Netherlands Association of Senior Citizens (ANBO) contains a nationally recognized and uniform set of standards for housing for the elderly, set up as a checklist. These were standards that senior citizens and their organizations would not only like to see applied to housing but also the environment in which they live thus making it 'suitable for the elderly'.

The checklist was developed from over 40 different lists that were used throughout the country. It contains items in five domains:

1. Safety and security: covering the prevention of accidents in the home and discouraging crime.
2. Accessibility: providing standards for making a home or residential building accessible for wheelchair users.
3. Ease of use: including criteria connected with the possibility of minor disabilities and the need for comfort.
4. Adaptability: meaning that the home can easily be adapted for wheelchair users and those with disabilities.
5. The environment: including the proximity of facilities and security in the home and on the street.

Each of these categories has its own set of standards. Each requirement or criterion is assigned 10, 5 or 3 points. The 10-point criteria are the basic standards, the 5-point criteria are major recommendations, and the 3-point criteria serve as useful suggestions. If a home or a complex of homes scores enough points on this checklist, it receives the hallmark (Seniors' label).

In this survey, only the first four categories (i.e. criteria restricted to the house itself) were used. To this sub-list a number of extra items were added, for example concerning furniture arrangement. In order to fill out the inventory, it was necessary for the interviewer to see (and measure) the bathroom and bedroom(s), the kitchen, the hall, and the living room. The sum of the scores on the safety, accessibility, and ease of use aspects was calculated and named 'adaptedness' (actual affordances of the home, as opposed to 'adaptability', which is a score on the ease with which the home can be adapted to provide certain affordances in the future).

3.3 Results

The outcome of this study can be characterized in terms of the four interrelated issues that were described in section 3.1. We expected that the type of problem would influence the type of adaptive strategy people choose, based of for instance the availability of ready-made solutions and the commitment of persons to the blocked goal. This will be discussed in section 3.3.1. In the following section the role of the various coping resources (as indicators of competence) on the choice of adaptive strategies is analysed. In general we expect that higher competence is related to more assimilative, goal-directed strategies. The goal of section 3.3.3 is to gain a deeper insight into the actual process of choosing and adaptive strategy. Finally, in section 3.3.4 we analyse whether the outcome of the adaptive process is evaluated differently for the various adaptive strategies, in terms of satisfaction and perceived effectiveness. Although both assimilative and accommodative strategies could lead to satisfaction, we expected that satisfaction (and perceived effectiveness) in general would be highest for more assimilative, goal-directed solutions. These issues will be discussed in turn, after presenting

some general descriptives.

The number of problems (both solved and unsolved) due to physical limitations that was reported varied between 0 and 14 (*M* = 4.9, *SD*=2.8, *Median* = 5). A stepwise linear regression analysis on this variable with age, gender, and the indicators of the three types of coping resources as independent variables only rendered health as a significant predictor, *Beta* = -.64, $p < .001$, indicating that people with better health reported less problems.

The problems were solved with solutions that were categorized in terms of the five-type configuration of solutions in the second column of Figure 3.1 (this was fairly easy since the respondents gave detailed descriptions of their solutions). Scores were calculated on these five adaptive strategies for all respondents, proportional to the total number of problems they reported. Descriptive statistics are reported in Table 3.3. The percentage of solved problems varied between 0 and 100% (*M* = .73, *SD* = .28).

Table 3.3

The use of the five adaptive strategies, proportional to the total number of problems for each person

	five-type categorization	detailed categorization
Adaptation of physical environment	41 %	
Modification of home		29 %
Use of assistive device		12 %
Formal help	15 %	
Formal care / meals on wheels		8 %
Paid housekeeping		6 %
Informal help	6 %	6 %
Behaviour change (self or partner)	11 %	
Help from partner		6 %
Personal behaviour change		4 %
Accommodation	27 %	
No solution, muddle through		19 %
Give up behaviour		8 %

Note. Scores for every strategy were computed by dividing the number of times this strategy was chosen by the number of problems that was mentioned by the respondent.

3.3.1 Type of problem and adaptive strategies

The reported problems were initially divided into 18 different groups. This categorization was based on the type of activity respondents reported to have problems with. To reduce this number, a correspondence analysis was performed with these problem types as rows and adaptive strategies as columns. Correspondence analysis is a multivariate method for exploring cross-tabular data by converting such tables into graphical displays, called 'maps', and related numerical statistics (Greenacre & Blasius, 1994). It is a valuable exploratory technique, not so much in testing, but rather in understanding the information contained in these tables.[2] It shows which problem types are similar to each other in terms of the adaptation types chosen to solve the problem. Problems with similar distributions of adaptive strategies will be close to each other on the map. Problem types that were close to each other both in the map and as regards content were clustered, resulting in 7 categories of problems. The list with the original eightteen problem types and the resulting seven-type clustering is reported in Table 3.4.

Table 3.4
Categorization and clustering of problem types

	Detailed categorization	Final categorization
1	housekeeping	housekeeping
2	preparing meals	housekeeping
3	getting in and out of the bathtub	mobility
4	getting up from the toilet seat	mobility
5	other problems in bathroom	personal care
6	walking	mobility
7	negotiating obstacles in mobility	mobility
8	climbing stairs	mobility
9	bending / kneeling	lifting , reaching , etc.
10	reaching high or lifting things	lifting , reaching , etc.
11	hobbies/ leisure activities	hobby / leisure
12	home maintenance	home maintenance
13	using the telephone	security / communication
14	feeling safe and secure	security / communication
15	general fatigue	hobby / leisure
16	getting up from a chair or bed	mobility
17	getting dressed	personal care
18	having visitors	hobby / leisure

[2] Correspondence analysis is used to investigate the magnitude and substantive nature of the association between the row and column categories of the cross-tabulation. Primary concepts are profiles (of row or column percentages), masses, and chi-squared distances.

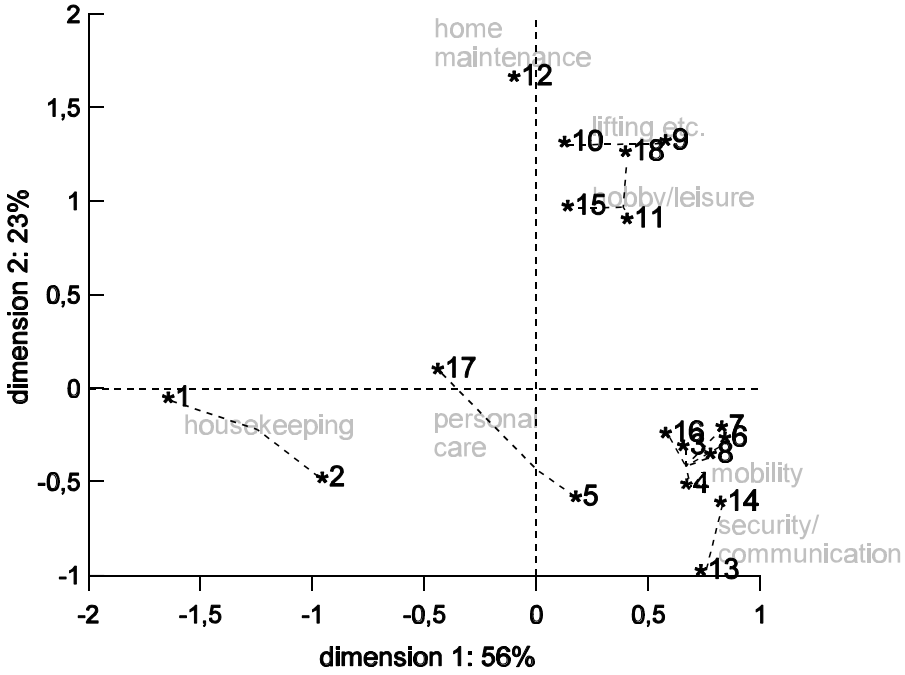


Figure 3.2: Correspondence analysis with detailed problem categorization. The numbers refer to the detailed categorization as listed in Table 3.4, the labels refer to the seven-type categorization

The correspondence-analysis map with the detailed categorization of problems is shown in Figure 3.2. The distribution of the adaptive strategies over the seven problem types is reported in Table 3.5. The cross-tabulation indicates that the type of coping strategy that is chosen significantly depends on the type of problem, *Chi-square* (24, N = 493) = 413, $p < .001$ (Goodman & Kruskal *Lambda* with adaptive strategy dependent = .35). The results of a second correspondence analysis with these seven problem categories is presented in Figure 3.3. It shows how the various problem types and adaptive strategies are related. The figure indicates, for instance, that problems with housekeeping and preparing meals are relatively often solved by arranging formal help (paid housekeeper, meals on wheels), while mobility problems are often solved by physical modifications (e.g. installing an elevator in case of a problem with stair-climbing) and that problems with hobbies are often not solved at all. Thus, the various problems have different orientations in this 2-dimensional space. The first dimension can be interpreted as ranging between help from others to managing on your own (left - right), the second as running from structural, long-term to relatively ad hoc adaptations (down - up).

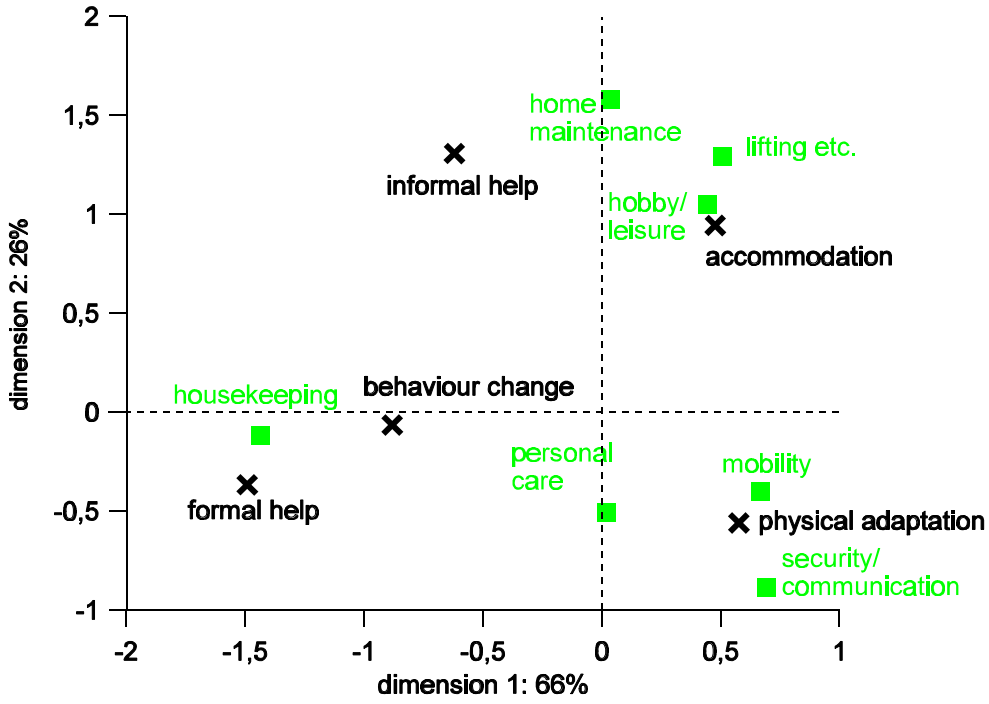


Figure 3.3: The relation between problem types and adaptive strategies (correspondence analysis, canonical normalisation)

Table 3.5

Distribution of adaptive strategies by problem type

adaptation / problem type	Adaptation of physical environment	Formal help	Informal help	Change of behaviour	Accommodation	Total N	Total %
housekeeping/ preparing meals	7 %	53 %	8 %	25 %	6 %	**130**	**(26 %)**
personal care	56 %	23 %		6 %	15 %	**52**	**(11 %)**
mobility	72 %	1 %	1 %	5 %	21 %	**173**	**(35 %)**
hobby / leisure time	26 %		3 %	11 %	61 %	**66**	**(13 %)**
lifting/reaching bending/kneeling	23 %		8 %	4 %	65 %	**26**	**(5 %)**
home maintenance	18 %	5 %	32 %		45 %	**22**	**(4 %)**
security/ communication	88 %			4 %	8 %	**24**	**(5 %)**
Total	**43 %**	**17 %**	**5 %**	**11 %**	**25 %**	**493**	**100 %**

Explaining differences in the distribution of adaptive strategies by problem type

Primary appraisals were hypothesized to explain part of the variance in adaptive strategies: for activities to which they are more committed, people should choose assimilative, problem-focused strategies rather than accommodative, emotion-focused ones. Higher commitment to activities should be related to the importance of the goals these activities serve.

In Table 3.6, the importance scores of the eleven goals related to the home are reported. Instinctively tieing these data to the various problem types in Figure 3.3, it seems likely that problems related to housekeeping, mobility, security and personal care have strong relations with the first four (most important) goals; problems related to home maintenance and hobby more to the last three or four (least important). The importance dimension seems to be highly correlated with the second dimension in this figure (running from structural to provisional (ad hoc) solutions), but not with the first one (running from help from others to managing on your own).

Table 3.6
Importance of goals related to the home

		Mean importance	SD
Safety	feeling safe in your own house	2.60	0.77
Autonomy	being able to live independently	2.35	1.24
Control	being able to operate everything in the house	2.06	0.82
Accessibility	being able to move around in your house	2.04	0.87
Comfort	a house full of conveniences	1.97	0.98
Privacy	not being watched in your house	1.43	1.01
Social Contact	contacts with other people in your house	1.38	1.03
Personality	really your own house, full of memories	1.13	1.00
Aesthetics	having a beautiful home	1.06	1.04
Stimulation	seeing and doing nice things in your house	1.00	0.87
Self worth	having a house that shows you still count	0.91	0.94

Note. Scores ranging on a scale from 0 (not important) to 3 (very important).

Though it is not possible to provide evidence for explanations of this pattern in the present study, a tentative interpretation of the data is possible. Part of the variance in adaptive strategies over problem types may be attributed to the presence and familiarity of certain typical solutions for problems. For instance standard technical solutions exist for mobility related problems (walking aids, grab bars) and formal help in housekeeping and personal care is well organized in most Dutch cities. These solutions are relatively readily available, compared to for instance hobby-related issues. Importance of the goal or activity also seems to

play an important part, not so much in predicting the choice between social or technical solutions, but rather between structural and provisional solutions. For problems related to the more important goals, people may be more willing to invest time and effort to arrange a substantial and lasting solution than for problems related to the less important goals, where ad hoc or provisional solutions are more likely. This may also reflect social influences: it seems better accepted to ask for help for problems that are related to, for instance, autonomy and independence than for problems related to stimulation. In line with this, findings could also partly be explained in terms of the concept of selective optimization (Baltes & Baltes, 1990). People invest their (decreasing) resources in maintaining their most important goals and release other, less central goals.

The analysis of the pattern in adaptive strategies has mainly been discussed in terms of problem type up to now. However, besides problem type, coping resources were also hypothesized to predict part of the variance in adaptive strategies. This will be explored in the following section.

3.3.2 Coping resources and adaptive strategies

In the preceding section, the problem type was shown to influence the type of adaptive strategy that is chosen for a particular problem in the home. Besides this factor, we also expected the various coping resources to explain part of the variance. In the present section, this is investigated in regression analyses. First, linear regression analyses are reported, to predict the proportionate adaptive strategy scores of respondents with only the coping resources as independent variables. The influence of problem type cannot be accounted for in these analyses. For this reason, subsequent logistic regression analyses are performed within specific problem categories, to control for the type of problem. Then conclusions will be drawn concerning the role and relative importance of the various predictors.

Linear regression analyses

Five subsequent stepwise regression analyses were performed with the proportional scores of the adaptive strategies as dependent variables (computed as described in section 3.3 and reported in Table 3.3). Besides the indicators of the various types of resources that were discussed earlier, age and gender were also entered as independent variables. First, bivariate correlations between the independent variables were investigated. The results are reported in Table A.1 in Appendix A. A number of significant, yet small correlations ($\leq .3$) existed. However, some variables correlated more significantly with a coefficient $> .3$ (all $p < .001$). Financial situation was positively related to health score, education level, and adaptability of

the house. Living alone was correlated with age and practical knowledge: respondents living alone were relatively older and scored lower on the knowledge test. Finally, the two variables describing the quality of the home were correlated. This may have influenced the results of the regression analysis.

The zero order correlations between the adaptive strategies and the coping resources are reported in Table A.2 in Appendix A. Some modest but significant correlations existed for every adaptive strategy. However, in the stepwise regression analyses only one significant predictor was found for every strategy. The proportion of physical adaptations was predicted by education level *Beta* = .25 (p = .02) the effect of knowledge did not remain significant (attributable to correlation with education level). Education level also was the only significant predictor of the proportion of formal help, but the direction of the effect was reversed, *Beta* = -.27 (p = .01). Again, knowledge level was not entered in the equation. In the regression analysis with the proportion of informal help as the dependent variable, the dichotomous variable 'living alone' was the only predictor, *Beta* = .26 (p = .01), although financial situation came close. Persons living alone received help from their children more often than persons living with their partner. These latter persons received help from their partner more often, as reflected in the analysis of change of behaviour. Here the effect of living alone was also significant but reversed, *Beta* = -.33 (p = .002). Finally, in the analysis of the proportion of accommodation, adaptability of the house was entered in the equation *Beta* = -.27 (p = .01).

The linear regression analyses have rendered some, though modest, significant results. They point out that personal resources, specifically related to cognitive competence (education and knowledge level), have a positive effect on coping by modifying the physical environment as opposed to more socially oriented adaptation strategies. Living alone versus living with a partner only seems to influence whether the person receives informal help from the partner or from children. No other effects of social resources were found. Finally, environmental resources (adaptability of the house) were also shown to influence the proportion of accommodative strategies.

There are two points that should be raised at this moment. First, though these analyses were performed separately, they are logically interrelated, since the five proportion scores add up to one hundred percent. This is also clearly visible in the results of the analyses and the zero order correlations in Table A.2: resources that have a positive effect on one of the adaptive strategies usually have the opposite effect on one of the other ones. Second, the analyses were not corrected for the influence of problem type. This issue will be dealt with in the following section, after which some final conclusions will be drawn concerning the roles of the various resources.

Logistic regression analyses

A possible drawback of these regression analyses is that they do not take the type of problem into account, although it was shown earlier that this was an important determinant of coping strategies. We therefore performed some additional regression analyses *within* the largest problem categories: housekeeping, personal care, mobility, and hobby and leisure. The frequencies in the remaining categories were too low for subsequent analysis. For every problem category, two alternative strategies always seemed to prevail (making up more than 75%, see Table 3.5), while the frequencies for the remaining categories were low. Logistic regression analysis was used to find the determinants of the choice between these two alternatives (participants who chose one of the alternatives were omitted). The same independent variables were used as in the linear regression analyses, using a stepwise selection method. The results are reported in Table 3.7.

Table 3.7

Summary of stepwise logistic regression analyses for predicting adaptive strategies

		Regression statistics				
Problem type	Predictor	Beta	SE	Wald	Sig	*adaptive strategies*
Housekeeping	Alone	1.08	0.25	18.3	.000	*formal help - changing behaviour*
Personal care	Adaptedness	-1.33	0.57	5.4	.020	*physical adaptation - formal help*
	Education	-2.47	1.31	3.6	.058	
Mobility	Adaptedness	-0.66	0.22	8.8	.003	*physical adapt. - accommodation*
Hobby / leisure	Knowledge	-0.76	0.38	4.0	.046	*physical adapt. - accommodation*

Note. 'alone' is a dichotomous variable, high scores represent living alone vs. w. partner

For problems related to housekeeping, the two most important adaptive strategies were the use of formal help and changing the person's or the partner's behaviour. The only variable that was entered in the equation was living situation, indicating that respondents without a partner were more likely to choose formal help (N = 79; 74% correctly classified).

Personal care related problems were mainly solved by physical adaptations or formal help. Two variables were entered in the equation: education level and adaptedness (N = 39; 74% correctly classified). Physical adaptations were chosen more often by respondents with a higher education level and in homes that scored higher on the adaptedness variable.

Adaptedness also was the only indicator that was entered in the equation for mobility related problems (N = 157; 77% correctly classified). Respondents with homes scoring higher on this variable had chosen physical adaptations rather than accommodation.

For problems related to leisure and hobbies, the two most relevant strategies also were physical adaptations and accommodation. Knowledge level was the only significant determinant, indicating a positive relationship between practical knowledge and physical adaptations (N = 53; 70% correctly classified).

Although these variables were entered in the equation - which implies that they had a significant contribution - the percentage of correctly classified cases improved only marginally (around 5 % each analysis). Therefore, these findings should be viewed with some scepticism. However, the reliability of the findings is supported because the results of the two types of analyses - the linear regressions predicting the proportionate adaptive strategy scores for the participants and the logistic regressions predicting the choice of a specific adaptive strategy for a given problem type - point in a very similar direction. Personal resources, specifically education and knowledge level, were positively related to physical adaptations and negatively to the use of formal help and accommodative adaptations. The same holds for environmental resources, indicated by adaptedness and adaptability of the home. The role played by social resources was limited: the indicators of the type and size of the social network did not produce any significant effects. The only indicator that was found to influence adaptive behaviour was whether the person was living alone or with a partner. For informal help, individuals living alone turned to their children or formal help more often than others, who could rely on their partner to help out. The role of others in the process of adaptation will be studied more closely in the following section.

3.3.3 Problem-solving process

Of the 493 problems respondents mentioned, 196 were discussed in detail. Four different phases in the adaptation process were distinguished: problem recognition, thinking of possible solutions, planning the solution, and implementing the solution. For every phase, the respondents reported whether they had been actively involved in this phase. Then the same question was asked regarding the respondents' partners, sons, daughters, brothers, or sisters, other relatives, friends, neighbours, and professionals (care givers and doctors). In Table 3.8, the percentage of problems in which people were involved is reported for every phase. The general picture is high involvement in the first one or two phases and then a strong decline in the subsequent phases.

Table 3.8

Involvement of respondents and others in various phases of the problem-solving process

	Problem recognition	Thinking of solutions	Planning the solution	Implementing the solution
Respondent	90.3%	81.1%	51.0%	51.5%
Partner*	43.4% (100%)	35.7% (82%)	27.6% (64%)	24.0% (55%)
Daughter**	57.7% (67%)	45.4% (53%)	29.1% (34%)	23.0% (27%)
Son**	45.4% (53%)	37.2% (43%)	20.4% (24%)	15.3% (18%)
Sibling	24.5%	17.3%	7.1%	4.1%
Relatives	18.9%	11.7%	3.1%	1.5%
Friends	24.0%	12.8%	4.6%	2.6%
Neighbours	12.2%	8.2%	5.1%	2.0%
Care professionals	39.3%	30.6%	15.8%	11.2%

Note. N = 196. The values in parentheses represent the percentages relative to the number of persons who had contacts of the specified kind. *: In 43% of cases the respondent had a partner; **: In 86% of cases the respondent had children

Subsequently, the involvement of the respondents and their children in the four phases was studied in more detail. The involvement of the partner, when present, was almost identical to that of the respondent (this supports the idea of the couple as a unit). The data were compared for the various problem types. Figure 3.4 shows the involvement of the respondent and Figure 3.5 shows the involvement of the children (only for respondents with children) in the successive phases for six problem types. Due to the low number of problems in the category home maintenance, this type was omitted. The bars represent the percentage of involvement in the subsequent phases, differentiated by problem type. As can be seen from the diagrams, the problem-solving phase and the type of problem play important parts in the involvement of people in the problem-solving process.

In general, the involvement of the older person is high in the first two phases, but decreases rapidly to about 50% in the next phases. In about half of the problem episodes, the planning and implementation of the solution is left to others. A repeated measures analysis of variance (ANOVA) on the four subsequent involvement scores of the respondent, with problem type as a between-subjects factor gave the following results: first, a significant effect of problem type F (6, 175) = 3.48, p = .003, in addition, a significant effect of problem-solving phase F (3, 525) = 20.47, $p < .001$, and a significant interaction between problem type and phase F (18, 525) = 2,55, $p < .001$. This latter effect indicates that the involvement in the subsequent phases drops more sharply for some problem types than for others.

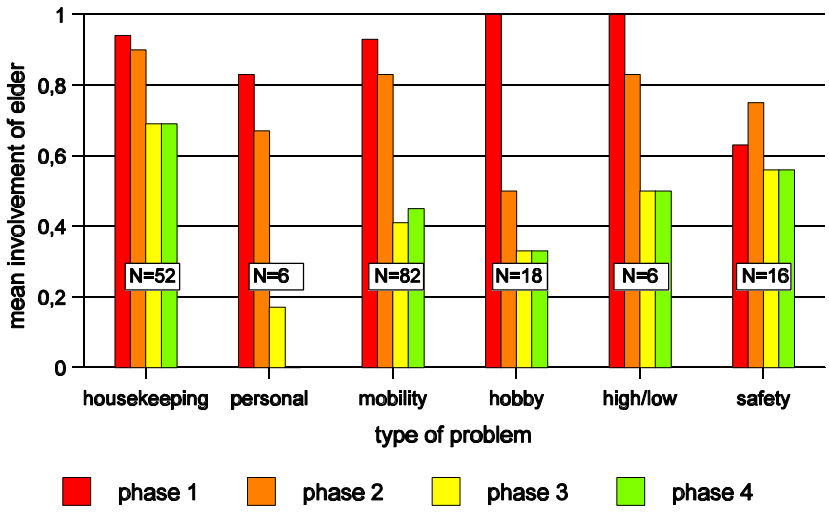


Figure 3.4: Involvement of respondent in the subsequent phases, for problem types

T-tests subsequently showed that in the first phase, the involvement in problems related to safety is significantly lower than for four other categories of problems: safety-related problems are often recognized by others, not by the older persons themselves. In the second phase, involvement was significantly lower for problems related to hobbies than those related to mobility or housekeeping. Some people seem to give up on this behaviour even before they have thought about possible solutions. In the third phase, the involvement in problems regarding personal care (bathing, dressing) drops notably and is significantly lower than for housekeeping problems. In the fourth phase it is significantly lower than for all the other problems. In this last phase, the score for housekeeping problems remains fairly high, and even significantly higher than for mobility, and hobby and leisure.

A similar repeated measures ANOVA with the subsequent involvement scores of the children gave the following results: no significant effect of problem type F (6, 148) = 1.79, p = .105, a significant effect of problem-solving phase F (3, 444) = 12.14, p < .001, but no significant interaction between problem type and phase F (18, 444) = 1.27, p = .203. The involvement of the children decreases significantly during the four phases. Although problem type and the interaction were not significant, involvement seems especially low in the last two phases of problems regarding hobby and leisure (Figure 3.5). T-tests showed that the involvement of children in these phases for problems related to hobby and leisure were significantly lower than for housekeeping, mobility, and safety.

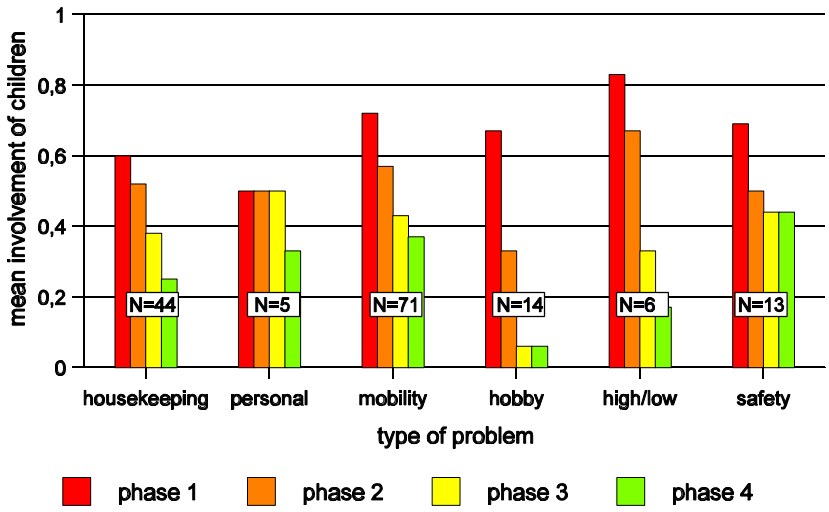


Figure 3.5: Involvement of children in the subsequent phases, for problem types

3.3.4 Evaluation of adaptive strategies

As a final step in the analysis, respondents' satisfaction with the various adaptive strategies was investigated. For the problems that were discussed in detail, respondents reported their satisfaction with and the perceived efficacy of the adaptive strategy on 5-point scales. Effectiveness scores were only given for the first four types of adaptation (since the fifth type, accommodation, referred to 'no solution', no effectiveness judgment could be made). Results are shown in Figure 3.6.

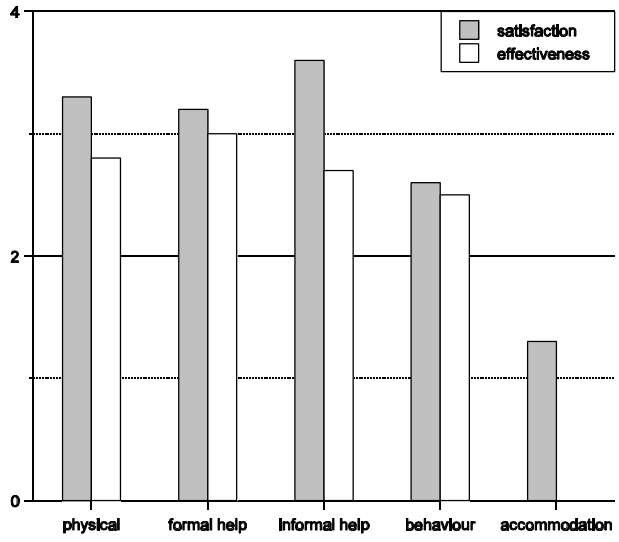


Figure 3.6: Satisfaction and effectiveness of adaptations

Analyses of variance were performed with ‘effectiveness’ and ‘satisfaction’ as respective dependent variables. Although the analysis with ‘effectiveness’ did not render significant results, the analysis with ‘satisfaction’ did, F (4, 177) = 27.77, $p < .001$. Two-tailed t-tests showed that satisfaction with environmental and both formal and informal social adaptation strategies was significantly higher than satisfaction with personal goal-directed adaptive strategies (change of behaviour), which in turn was significantly higher than satisfaction with 'accommodation'.

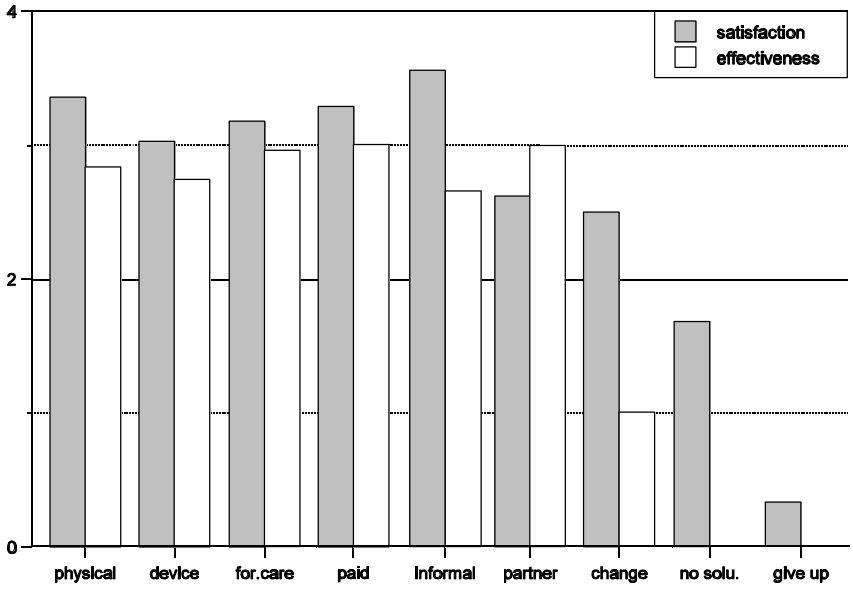


Figure 3.7: Satisfaction and effectiveness of adaptations (detailed categorization)

The same analysis was also performed with the more detailed categorization of solutions as factor variable (Figure 3.7). Again the results for effectiveness were not significant, and results for satisfaction did prove to be significant, F (8, 173) = 16.90, $p < .001$. Two-tailed t-tests (summarized in Table 3.9) showed that satisfaction with 'modifications of the home' and 'informal help' was significantly higher than satisfaction with 'help from partner' and 'change of own behaviour', satisfaction with 'help from partner' was in turn significantly higher than satisfaction with 'no solution'. Satisfaction with 'use of assistive device', 'formal care', and 'paid help' was also higher than satisfaction with 'no solution'. Satisfaction with 'giving up' was significantly lower than satisfaction with all other adaptive strategies, including ‘no solution’. Apparently this strategy has a more negative connotation, probably because it explicitly implies personal inefficacy.

Table 3.9

Summary of t-tests of satisfaction with adaptive strategies

	1	2	3	4	5	6	7	8	9
1 physical modification						*	**	***	***
2 assistive device								***	***
3 formal care								***	***
4 paid help								***	***
5 informal help						*	*	***	***
6 help from partner								***	***
7 change own behaviour									***
8 no solution (problem persists)									**
9 give up behaviour									

Note. Stars indicate that satisfaction with the strategy in the row is significantly higher than with the strategy in the column. *$p < .05$, **$p \leq .01$, ***$p \leq .001$.

3.4 Discussion

The general purpose of this study was to explore and describe the problem-solving behaviour of older people in their homes and to find important factors that influence this process, especially factors that might increase proactivity and assimilation. Based on findings in the literature, both the type of problem and a range of coping resources - personal, social, and environmental - were hypothesized to influence this process. The results support part of these assumptions and give insight into the relative importance of the various factors. An additional goal of the survey was to gain insight into the problem-solving process itself, especially into the involvement of the older individual and others in the successive phases of this process. These were described in relation to the type of problem individuals were coping with.

3.4.1 Type of problem and adaptive strategies

The type of adaptive strategy a person chooses was significantly influenced by the type of problem. The results of the correspondence analysis presented in Figure 3.3 show how the various problem types are related to the adaptive strategies. The problem types clearly have different orientations in this solution space. Part of this variance was expected in view of primary appraisals, reflecting the differences in importance and relevance of the various problems. Problems with activities that are more central to the older individual increase the appraisal of the possible costs and negative consequences of accommodation and hence the commitment to strive for assimilative, problem-focused coping strategies. This effect may also be related to social influences, reflecting the feeling that it is better accepted to ask for

help for problems that threaten daily functioning and health than for problems related to stimulation and hobbies. This variance in importance, however, mainly seemed to explain the variance along the second dimension in Figure 3.3, running from structural to provisional solutions, but not the first one, running from help from others to managing on your own.

Availability and familiarity of certain typical solutions for specific kinds of problems were suggested as one of the possible factors influencing variance along the first dimension. Though the data that were gathered in this study are not conclusive in this respect, it is very likely that in the area of personal care and mobility, instrumental solutions are more common than in the area of housekeeping and even more so than in leisure-time related areas. In this sense, the results presented in Table 3.5 ('adaptive strategies by problem type') in themselves already are of importance to people working in the field of housing for the elderly. While presently most of the attention in this field goes to solving problems in the 'practical' field (the activities of daily living (ADL)), other types of problems have often been neglected up to now.

3.4.2 Coping resources and adaptive strategies

Coping resources were also hypothesized to influence coping behaviour. Personal resources, specifically those related to problem-solving skills, were expected to be related to more assimilative strategies. In addition, practical knowledge was thought to specifically increase physical modifications. Similar effects were hypothesized for environmental resources. The influence of social resources was hypothesized in the direction of assimilation, possibly with a more significant effect on socially oriented adaptations.

The influence of the coping resources on adaptive behaviour was investigated in two steps. First linear regression analyses were performed, using data on all the problems, predicting the proportionate scores for the five adaptive strategies. Some modest but significant predictors were found. However, a drawback of these analyses is that they could not be corrected for the effects of problem type (due to the different types of variables, these analyses could not be combined). An alternative was to split the data and study the influence of coping resources on strategies within specific problem categories, after which logistic regression analyses were performed for the separate problem categories.

Though the effects in both regressions were modest, the results of the two analyses were very similar, which contributes to the reliability of the findings. Personal resource indicators (education level and practical knowledge) proved significant predictors of environmental adaptations and were negatively related to accommodation. This is in line with the hypothesis

that these resources would stimulate assimilation and stifle accommodation. However, the negative effect of these resources on the use of formal help (which should be considered at least moderately assimilative) was unexpected and indicates that there is an important difference between social and instrumental or environmental assimilation. Personal resources increase the proportion of these latter strategies. A very similar effect was found for the indicators of environmental resources: adaptability and adaptedness of the home were positively related to the proportion of physical adaptations and the (goal-directed) change of behaviour and negatively to the use of formal help and accommodation. In general it seems that these resources provide the person with more control over their situation. The more resources are available, the more likely a person is to proactively engage in the adaptation process and find an effective and satisfying strategy. Health, gender, and financial situation did not contribute significantly to this 'control'.

In none of these analyses did the indicators of social resources give significant effects, except for the variable 'living alone'. Respondents in a two-person household turned to their partners, whereas respondents living alone tended to turn to their children and in some cases to formal help. Size or type of the social network, however, were not found to influence adaptive behaviour. This could be due to the sub-optimal choice of measurements of the social network. However, a more probable explanation is that almost all respondents in this survey had at least one or two people whom they met on a regular basis, someone to turn to for advice on a problem or for assistance, when this was necessary. If a significant number of respondents in our sample had lacked these contacts, the results might have been different.

3.4.3 Problem-solving process

Besides investigating the influence of problem type and coping resources on the adaptational outcome, a second goal of the survey was to gain insight into the problem-solving process itself, especially in the involvement of the older individual and others in the successive phases of this process. These were described in relation to the type of problem individuals were coping with. The findings were expected to differ for the various types of problems, reflecting the differences in commitment of the individual or others to the specific goals for example.

The general picture concerning the involvement in the adaptive process is that the number of people active in the subsequent phases decreases; it is usually highest in the phases of problem recognition and thinking of solutions and then diminishes in the planning and implementation phases. Partners are as involved as the respondents themselves and children are often intensively involved in the process as well.

The proactivity of the older individual in the various phases was shown to depend on the type of problem he or she was coping with. Most problems that were reported were recognized by the older persons themselves. However, for problems related to safety, others (mainly children) were often the initiators of the process. This cannot be explained from the viewpoint of low commitment from the older persons; they remain highly involved in the subsequent phases and safety received the highest importance score. A more probable explanation is the high commitment of children to their parents' safety (their involvement in this problem was relatively high, in all phases), or the difficulty of recognizing these problems, since they do not necessarily hinder a certain activity from being performed.

The low involvement of the older person in the third and fourth phase of problems concerning personal care was striking, while the involvement of the children remained almost constant. However, the number of observations in this category was low (N = 6), and therefore questions could be raised about the validity of this finding.

For problems related to hobby and leisure, the picture is remarkable. The involvement of both the individual and the children dropped significantly in the second phase: many people gave up these activities, without even thinking about possible solutions or alternatives. The involvement of the children even drops to about zero in the subsequent phases. These findings could be due to several factors, e.g. low commitment to these goals (reflected by the low importance score of 'stimulation') or a lack of available ready-made solutions for problems of this type. In most other problem episodes, involvement only dropped after the second phase.

The second phase, thinking of possible solutions, seems to be a very crucial one. It is positive to note that several people are often involved in this phase. People apparently discuss their problem and possible solutions with their children, friends, relatives or care professionals. Frequently more than one solution is thought of. After this, the decision is made to engage in this or that strategy and one or two people subsequently plan and implement the solution. However, on several occasions people mentioned that they had not chosen the option of highest preference. This usually referred to an assimilative adaptation. Respondents explained rejecting proactive solutions for their problems in terms of perceived difficulty of solutions, the amount of effort that had to be invested, or insecurity about being able to find and organize or implement modifications. The impression was, however, that this was not based on frustrated earlier trials, but rather on anticipated (hypothetical) complications.

3.4.4 Satisfaction and effectiveness

The analysis of respondents' satisfaction with the different types of adaptive strategies did not render very surprising findings. Accommodative strategies were clearly judged to be less positive than the other ones and the second type of personal adaptations, changing your own or your partners behaviour, was also rated below the adaptations geared towards the physical and social environment. No significant differences were found between these latter adaptive strategies, though we had hypothesized that having to rely on help from others could sometimes be regarded as sacrificing part of your independence. On the other hand, technical aids or clearly prosthetic devices and environmental adaptations sometimes have a stigmatizing image, which could also infringe upon feelings of autonomy.

Two important points should be raised here. The first is that satisfaction ratings by older persons are generally found to be strongly skewed towards the positive side, possibly reflecting socially desirable answering tendencies and/or progressive stages of accommodation to decreasing resources and possibilities. High scores on these variables should always be viewed with some scepticism and the chances of finding significant differences are generally low. Rather than asking respondents to give evaluative judgments directly or react to general issues, working with concrete situations and problem episodes produced valuable information. Respondents became highly motivated when these were discussed and became more talkative, confident and critical. The high imageability of the situations enhanced discussions of the merits and demerits of solutions and strategies. This finding can help us design research methods that are more responsive to the attitude of older people in future studies.

A second point I would like to raise is that we only measured satisfaction with the solution at hand. However, the very act of exercising proactivity also contributes to the self-respect of people, even those who are already severely impaired (Bandura, 1986; Lawton, 1990). It helps maintain a feeling of competence and self-efficacy and prevents people from entering a downward spiral of inefficacy or even learned helplessness. These thoughts also provide an important reason for trying to stimulate proactivity and assimilation in adaptive problem solving among older people.

The impression that respondents rejected proactive solutions for their problems based on anticipated complications and difficulties, in combination with the significant yet modest role played by indicators of objective competence, triggered the idea of investigating the influence of perceived competence, or rather, perceived control in this process and of studying more closely the mechanism of choice of an adaptive strategy. In Chapter two we argued that self-efficacy would be the most suitable concept in this respect. In the following chapter, the

importance of self-efficacy in independent living in general is investigated in a second survey study. Subsequently, the role of self-efficacy in adaptive problem-solving behaviour in this domain is viewed more closely and explicitly in two experimental studies, described in Chapters five and six.

CHAPTER FOUR

IMPORTANCE OF SELF-EFFICACY IN INDEPENDENT LIVING

In Chapter three, adaptive problem-solving processes of older persons, confronted with problems in their homes, were studied. The data in this study suggested that besides the type of problem, perceived control in engaging in proactive adaptive strategies, resulting from 'objective' resources such as education level and financial and physical resources, but more subjective beliefs and considerations as well, could be a significant determinant of adaptive behaviour. The present chapter reports of a longitudinal, two-wave survey, in which we empirically investigated the importance of perceived control or rather, self-efficacy in independent living in general. Later, in Chapters five and six, we will focus on the role of self-efficacy in specific coping episodes in two experimental studies.

4.1 Goal of the Study

The present study comprised concepts of the theory of planned behaviour, a theory that is widely accepted and well supported in social psychology and incorporates cognitive self-regulation as an important aspect of human behaviour (Ajzen, 1991). It was developed in response to limitations of the theory of reasoned action, which proved adequate in predicting goal-directed behaviours that are easily executed by almost everyone, but failed in dealing with behaviours over which people have incomplete volitional control (Ajzen, 1991; Eagly & Chaiken, 1993). This seems highly relevant in the present context of older persons who are trying to find and implement solutions to their problems with independent living. Perceived behavioural control is an important concept in the theory of planned behaviour. The theory places this construct within a general framework of relations among beliefs, attitudes, intentions, and behaviour (Ajzen & Madden, 1986). Since the term perceived behavioural control is similar to Bandura's self-efficacy, we will, for simplicity's sake, use this latter term in the remainder of this chapter. The goal of the present study is to establish that there is an important role for perceived control in the prediction of behaviours of older individuals that are relevant for independent living. Three types of behaviour were selected that proved relevant for independent living in an earlier study by Brouns (1997): preparing meals, grocery shopping, and cleaning the house.

4.2 Method

4.2.1 Participants

The present study consisted of two questionnaires, filled out two weeks after each other. The ages of the participants in this sample ranged between 55 and 85 (M = 66.47, SD = 8.01). Participants were drawn randomly from the persons in this age group living in Landgraaf (a town in the south of the Netherlands) and received a letter containing the first questionniare. On this questionnaire all participants indicated whether they would be willing to fill out the short second one. The initial response rate was 70 %, for the second wave it was 35 %. This second sample did not significantly differ from the first one regarding age, health, or housing tenure; it did consist of a relatively high percentage of men: 47 male, 34 female, makes 58% versus 33% in the first sample. Since this was a fairly skewed distribution, we decided to explicitly incorporate the gender variable in the analyses. Only the data of the persons that also participated in this follow-up study were used in the present analysis, comprising a sample of eighty-one participants.

4.2.2 Questionnaire

The measured concepts in this study were based on the theory of planned behaviour (Ajzen, 1991; Ajzen & Madden, 1986). In the first questionnaire, attitude, self-efficacy, and intention were measured, actual behaviour was measured in the second one. The questions focused on three activities: preparing meals, grocery shopping, and cleaning the house (Brouns, 1997) .

The first questionnaire consisted of three sets of items, each concerning one of the three behaviours. Each set consisted of three items measuring the attitude towards the respective behaviour (5-point scales: unpleasant (1) - pleasant (5), unenjoyable (1) - enjoyable (5), unimportant (1) - important (5)), two items measuring self-efficacy regarding these activities (5-point scales: impossible (1) - possible (5), hard (1) - easy (5)), and one item measuring intention to engage in the activity (4-point scale: certainly not (1) - definitely (4)).

On the second occasion, participants were asked to respond to the following question: “How many times have you engaged in the following activities during the past two weeks?”. Participants responded on a 5-point scale (not at all (0) - very often (4)) for each of the three behaviours and returned the questionnaire by mail.

4.3 Results

4.3.1 Construction of scales

For all three activities, the three attitude items were aggregated into an attitude-scale and the two self-efficacy items were combined into a self-efficacy scale. Internal consistencies of the scales were tested: the Cronbach's alpha values for the attitude scales and Pearson correlations for the self-efficacy scales are reported in Table 4.1. All internal consistencies proved satisfactory.

Table 4.1
Internal consistencies of attitude and self-efficacy scales and bivariate correlations

	Cronbach's alpha of attitude scale (three items)	Pearson correlation for the two self-efficacy items
preparing meals	0.93	0.64
grocery shopping	0.89	0.87
cleaning the house	0.89	0.77

Descriptive statistics

For all three activities, the mean scores for attitude, self-efficacy, intention and behaviour were computed for the total sample and for the men and women separately. The statistics are reported in Table 4.2.

Table 4.2
Descriptive statistics: means and standard deviations

	preparing meals				grocery shopping				cleaning the house			
	A	SE	I	B	A	SE	I	B	A	SE	I	B
men	4.0	4.4	3.3	1.2	4.0	4.5	3.6	2.1	3.7	3.7	3.1	2.1
women	4.5	4.7	3.7	3.4	4.3	3.7	3.3	2.5	3.9	3.5	2.7	2.8
M	4.2	4.5	3.5	2.1	4.2	4.2	3.5	2.3	3.8	3.6	2.9	2.4
SD	1.0	0.9	1.0	1.7	1.0	1.2	0.9	1.2	1.2	1.4	1.2	1.3

Note. scores for attitudes (A) and self-efficacy (SE) ranged from 1 to 5, scores for intention (I) from 1 to 4, and for behaviour (B) from 0 to 4.

T-tests showed that there were some significant differences between male and female participants. For the activity preparing meals, the attitude and behaviour were significantly higher for women, t (77) = 2.51, p = .014, and t (74) = 7.00, $p \leq .001$. For the activity grocery

shopping, self-efficacy was higher for men, t (75) = 2.99, $p \leq .05$. Finally, for cleaning the house, the women scored higher on frequency of behaviour, t (75) = 2.46, $p \leq .05$.

Bivariate correlations between the variables are reported in Table 4.3. The attitude and self-efficacy measurements were unrelated for 'preparing meals' and 'grocery shopping'. The bivariate correlation between the attitude scale and self-efficacy scale for the activity 'cleaning the house' was significant, but not so high to be harmful for the regression analyses. Tolerance levels did not indicate problems of multicollinearity.

Table 4.3
Descriptive statistics: bivariate correlations

	preparing meals				grocery shopping				cleaning the house			
	A	SE	I	B	A	SE	I	B	A	SE	I	B
A		0.22	0.50*	0.38*		0.12	0.29*	0.21		0.42*	0.59*	0.40*
SE			0.58*	0.33*			0.62*	0.37*			0.69*	0.40*
I				0.36*				0.51*				0.47*

Note. *$p < .05$*;* attitudes (A), self-efficacy (SE) and intention (I)

4.3.2 Tests of the theoretical model

The general strategy for testing the model consists of two phases:

1. The first phase consists of a stepwise regression analysis with the intention score for the activity as the dependent variable and gender, attitude and self-efficacy as predictors.
2. The second phase consists of a hierarchical stepwise regression analysis with the frequency of behaviour as the dependent variable and gender and intention as predicors in the first block, attitude and self-efficacy as predictors in the second one.

Based on the theory of planned behaviour, one would expect attitude and self-efficacy to predict intention, and, subsequently, intention to predict behaviour (in other words, the effects of attitude and self-efficacy are mediated by intention). The regression weights (beta) indicate the relative importance of the attitude and self-efficacy component in the equation.

Preparing meals

In the stepwise regression analysis with the intention to prepare meals as the dependent variable, both attitude and self-efficacy were entered into the equation, gender was not. Both regression coefficients were considerable; the effect of the self-efficacy variable was slightly

bigger and entered first. The analysis with the frequency of behaviour as the dependent variable rendered gender and intention as a significant predictors. The variables attitude and self-efficacy were not entered, implying that they were sufficiently accounted for by the intention variable. Men engaged in this behaviour less frequently than women. The results are reported in Table 4.4.

Table 4.4
Stepwise regression analyses for 'preparing meals'

	Intention dependent				Behaviour dependent			
	entered	Beta	sig.	df	entered	Beta	sig	df
Attitude	2	.42	<.01	1	-	.19	.09	
SE	1	.44	<.01	1	-	.12	.28	
Gender	-	.00	.99		1	-.57	<.01	1
Intention	*	*	*	*	2	.22	.02	1
R square		.44		72 (res)			.43	68 (res)

Grocery shopping

In the analysis with the intention to go grocery shopping as the dependent variable, attitude and self-efficacy were entered into the equation, gender was not. The regression coefficients were considerable; the effect of self-efficacy was strongest and entered first. The analysis with the frequency of behaviour as the dependent variable rendered intention and gender as significant predictors. Again, the effect of the attitude and self-efficacy variables were accounted for in intention. The results are reported in Table 4.5.

Table 4.5
Stepwise regression analyses for 'grocery shopping'

	Intention dependent				Behaviour dependent			
	entered	Beta	sig.	df	entered	Beta	sig.	df
Attitude	2	.23	.01	1	-	.08	.43	
SE	1	.60	<.01	1	-	.17	.20	
Gender	-	-.04	.65		2	-.21	.04	1
Intention	*	*	*	*	1	.51	<.01	1
R square		.43		71 (res)		.31		69 (res)

Cleaning the house

In the regression analysis with the intention to engage in house cleaning as the dependent variable, all predictor variables - attitude, self-efficacy, and gender - were entered into the equation. The regression coefficients were considerable; the effect of self-efficacy was strongest and entered first. The analysis with the frequency of behaviour as the dependent variable rendered intention and gender as significant predictors, again implying that the effect of the attitude and self-efficacy variable is mediated by intention. The results are reported in Table 4.6.

Table 4.6
Stepwise regression analyses for 'cleaning the house'

	Intention dependent				Behaviour dependent			
	entered	beta	sig.	df	entered	beta	sig.	df
Attitude	2	.38	<.01	1	-	.05	.70	
SE	1	.51	<.01	1	-	.11	.41	
Gender	3	.18	.02	1	2	-.37	<.01	1
Intention	*	*	*	*	1	.52	<.01	1
R square		.61		71 (res)		.35		66 (res)

4.4 Conclusion and Discussion

The goal of the study was to investigate whether there is an important role for self-efficacy in the prediction of older individuals' behaviours that are relevant for independent living. For all three behaviours that were investigated in the study, self-efficacy was a significant predictor, and even the most significant predictor of intention. Intention in all cases mediated the effects of both attitude and self-efficacy on actual behaviour in the two weeks that followed. Surprisingly, the effect of gender influenced behaviour directly and was only once entered in the prediction of intentions. The gender variable probably reflects different habits or social roles of men and women. Behaviour is not always fully intentionally planned, but also comprises habitual tendencies (Aarts et al., 1997). The general conclusion is that the relevance of self-efficacy in this domain has been established.

The theoretical basis for the present study was given by the theory of planned behaviour. It has proved useful in demonstrating the relevance of self-efficacy within the domain of independent living. However, although the name implies otherwise this theory teaches us little about the actual 'planning' process; all it does to acknowledge this process is to introduce the self-efficacy term that predicts weakened intentions for less controllable behaviours and

lowered likelihoods of engaging in them (Eagly & Chaiken, 1993). Multiple options for behaviour are not specifically incorporated either. In the remainder of this dissertation we will therefore return to the model of adaptive behaviour by Brandtstädter and Renner (1990) and focus on the role of self-efficacy in the context of specific coping episodes.

The findings of the two surveys not only hold implications for further research, but for practice as well. If one's goal is to support older people in living independently and in dealing with problems that occur in their home, designing sophisticated aids and adaptations is not sufficient. Designers and care professionals have to be sensitive to the complications older people face or anticipate facing in planning and implementing their products or adaptations. This should be visible in the design or product itself, in the process of implementing, building or learning to use it, and in an active, supporting, advising and educating role in the first phases of problem episodes.

PART THREE

THE ROLE OF EFFICACY, DISPOSITIONS, AND IMPORTANCE

*In the first experiment we will test the predictive value of **self-efficacy** and personal dispositions - **tenacity** and **flexibility** - for adaptive behaviour, in terms of **assimilation** versus **accommodation**. The possibly mediating role of **response efficacy** is also explored.*

*In the second experiment we will try to replicate the findings of the first one and test the role of one additional factor: **goal importance**.*

CHAPTER FIVE

SELF-EFFICACY AND DISPOSITIONS - FLEXIBILITY AND TENACITY[3]

Suppose a 78 year-old woman finds herself in the following situation: her sense of hearing has decreased rapidly in a short period. When she talks to people in person, the problem is not that serious, she can still understand them fairly well, but using the telephone has become very hard, even at its loudest setting. This poses a serious problem for her, because her children live far away and cannot visit her every day. They used to phone her very regularly, but now she is afraid she may have to do without this contact. How can she cope with this problem? She could learn to phone her children using a computer, through the Internet. Or she could ask the woman next door to help her with calling her children. She could also try to accept that phoning is no longer an option. Maybe her children will come and visit her more often. Apart from that she could see her neighbours and friends more often.

The situation described above is only one of the possible problems people can be confronted with as they age. Besides the three options that are described, many other alternatives exist. These various adaptive strategies can be categorized as assimilative adaptations on the one hand, or as accommodative adaptations on the other. Assimilation refers to problem-focused, instrumental activities, aimed at preventing or alleviating developmental losses in domains that are relevant to the individual's self-esteem and identity, while accommodation refers to processes by which personal goals and frames of self-evaluation are adjusted to changes in action resources and functional capacities (Brandtstädter, Wentura & Greve, 1993). In this sense, we could characterize the first option, calling by computer, as assimilative; the third one, giving up phoning and hoping they will visit more often as clearly accommodative; the option involving help from others holds some assimilative qualities, but should be regarded as accommodative because it requires accepting invasion of privacy and loss of autonomy, which are considered central goals to most older persons.

The solution involving the use of the computer is probably the most optimal and problem-focused one. She could continue talking with her children regularly and privately, without the help from others. However, many people, especially older persons, may perceive learning to

[3] Adapted from Slangen - de Kort, van Wagenberg, Aarts, & Midden (1998).

use a computer difficult or at least effortful. Some might perceive this situation as a challenge and enroll in a course as soon as possible, others might reconsider alternatives and maybe decide to choose a different strategy. The choice of the older woman in our hypothetical problem will depend on personal characteristics and her appraisal of the difficulty of the situation on the one hand and of her own competence on the other.

5.1 Goal of the Study

The purpose of this study was to investigate the role of self-efficacy and the personal dispositions tenacity and flexibility with regard to the choice of adaptive strategies by older people, in concrete hypothetical problems in their home environment. The focus was on technical solutions that vary between fairly and very complex, since simple solutions would only produce trivial results.

Self-efficacy is defined as a person's judgment of his/her capability to organize and execute the courses of action required to attain designated types of performances (Bandura, 1986; Skinner, 1996; discussed in section 2.2.3). Tenacity and flexibility are dispositions, according to Brandtstädter, Wentura & Greve (1993), that are respectively related to the two basic processes on which the apparent resiliency of the ageing person hinges: assimilation and accommodation respectively (see section 2.4).

Brandtstädter and Renner (1990) posited a general model of coping behaviour, in which both personal dispositions and the self-efficacy construct play an important role. The model describes how the two modes of coping are actually two successive phases in a process that is influenced and moderated by emotions, cognitive appraisals, and control beliefs. In the initial stage of a coping episode, assimilative tendencies are expected to dominate, as long as the person has reasons to assume that this behaviour will be successful. Accommodative tendencies are activated to the extent that active, assimilative attempts to change the situation become or are perceived as ineffective. The latter might be the case, for instance, when self-efficacy with regard to the assimilative strategy is low. Relatively tenacious people are thought to be more persistent in the face of set-backs or obstacles. Flexible persons prefer assimilative strategies as much as inflexible persons, but they will be more capable of relinquishing attempts at assimilation if the chances to attain this goal drop below a certain level. People who are both tenacious and flexible are hypothesized to adapt most efficiently to changing circumstances.

The model was based on studies of general coping behaviour and tendencies, but was never tested in concrete problem situations. The concepts were validated on the level of general dispositions, depression, life orientation, and satisfaction, but not on their direct effects on

adaptive behaviour in coping processes (Brandtstädter & Renner, 1990). In addition, control was operationalized as a trait, rather than as under the influence of situational characteristics. However, adaptive behaviour actually takes place on the level of specific actions and behaviours, and in concrete settings, influenced by the characteristics of the problem and its appraisal. Until now, the model has not been tested on this level. In order to gain a better understanding of the actual coping process, it is essential to study the importance of both self-efficacy and the personal dispositions flexibility and tenacity simultaneously, with an eye to the adaptive behaviour of older people facing problems.

Based on theoretical considerations, the expectations regarding the outcomes of the present study can be summarized as follows: first, it is hypothesized that self-efficacy has a significantly positive effect on the intention to choose an assimilative adaptation strategy. If people feel highly efficacious at solving their problems in a goal-directed way, they will be more likely to engage in this proactive strategy. Second, relatively tenacious persons are expected to show higher intentions to assimilate, since they are more persistent in complicated situations. Thirdly, flexible persons will modify their standards or goals more easily. However, this disposition will only become relevant when accommodation comes into sight or, in other words, when assimilative adaptation is hard or impossible. Therefore, we expected to find an interaction between flexibility and self-efficacy, showing a stronger effect of self-efficacy in the high flexibility condition.

5.2 Method

To test the hypotheses formulated above, a new research instrument was developed and tested, before it was used in the present and the following experiment (described in Chapter 6).

5.2.1 Development of research materials

The research instrument was based on the scenario and questionnaire approach, in which respondents read or listen to a scenario and answer questions that follow. Both from an ecological viewpoint and based on our earlier experiences in research with older people, the goal was to work with very concrete and recognizable problems and coping scenarios (Lawton, 1987; section 3.4.4). Rather than having the respondents give evaluative judgments on general or abstract issues, they were asked to visualize concrete problem situations and respond to specific adaptive strategies as if they themselves were experiencing these problem episodes. This methodology was also chosen because we considered it helpful in studying the actual process of adaptation.

By measuring both the actual choice and response efficacy appraisals of all solutions, the aim was to discover the mechanisms through which the self-efficacy appraisals and personal dispositions exert their influence on choice: directly or mediated, i.e. via other perceptions and appraisals.

To prevent any specific situation from influencing the results too strongly, different hypothetical problem scenarios were designed (descriptions are given in Appendix B, and an example was given in the introduction of this chapter). For each of these problem situations, three adaptive strategies were described: one assimilative adaptation and two less assimilative, more accommodative strategies, one of which concerned accepting help from others and one concerning psychological adaptation (we will refer to these adaptations as social and personal respectively, examples are given in Appendix B). The assimilative adaptations logically had the highest response efficacy (were most problem-focused) and involved an environmental modification or the use of a technical device. However, the alternatives that were presented were also valid and moderately attractive solutions for the problems presented, although less than the physical adaptation. Recognizing that the value of a scenario approach heavily depends on the subjects' ability to project themselves into the situation, much time and effort was spent developing realistic scenarios. The three adaptive alternatives were formulated to provide a realistic range of options, in accordance with the findings reported in Chapter three of this dissertation. The findings of that survey indicated that people often thought of several possible options to deal with a stressful situation and then chose one of those options. Offering a range of adaptive strategies can therefore be seen as ecologically justified and in accordance with realistic coping processes. Secondly, the present research focuses on finding determinants of a possible shift from assimilative to accommodative adaptations. In order to investigate this shift, these strategies should both be present in the research format.

Several pilot studies were conducted to obtain a set of hypothetical problem situations plus adaptive strategies at the right level of complexity. The problems had to be realistic and imaginable for persons over the age of 65, without occurring too frequently. They also had to cover a representative set of relevant domains of functioning. The majority of the respondents did not seem to have a problem visualizing the scenarios. It is a common finding that older research participants tend to respond with narrative answers and are sometimes resistant to providing category answers of the required type (Jobe, Keller, & Smith, 1996). In the present study, some respondents also showed a strong tendency to differentiate or explicate their answers to the questions. The questionnaire format was optimized during the pilots and, in addition, interviewers were trained to use a two-stage questioning technique, or help translate the respondent's answer when necessary.

5.2.2 Consistency, convergent reliability, and test-retest reliability

Internal consistency, convergent validity, and test-retest reliability of the scenario method and the choice measurement were tested in a pilot study among 23 older respondents (ages ranging between 65 and 95 years old, M = 74.4, SD = 8.6). In this study, four problem scenarios were used. Respondents were asked to read the scenarios one by one and then fill out the choice measurement for each of them. Subsequently, they were asked to read the scenarios again and then score their intention to engage in each adaptive strategy on 7-point scales (scores ranging from 1 = definitely not to 7 = definitely yes). For half of the sample, the order of the two types of measurements (choice vs. intention) was reversed. Three weeks later, respondents were asked to fill out the same questionnaire again (one person declined).

Choice options were explicitly incorporated in the research format, although this is somewhat uncommon in a number of related research domains. Studies in which the role of perceived control, efficacy or attitudes is investigated (e.g. embedded in the theory of reasoned action, theory of planned behaviour, protection motivation theory, social cognitive theory), usually focus on whether or not one certain behaviour is performed or intended. Although in real life people often choose from larger sets of alternatives, relatively few researchers have made an effort to model and incorporate choice in these theoretical models (e.g. Sheppard, Hartwick, & Warshaw, 1988; Dabholkar, 1994; Pieters & Verplanken, 1995). Dabholkar (1994) presented four possible models of the Theory of Reasoned Action, in which choice was integrated in different phases of the model. She argued that the relative appraisals of the options (resulting in the choice) could be made in different stages in the attitude - intention - behaviour process, depending, among other things, on the number of options, their familiarity and diversity. Pieters and Verplanken (1995) found that the number of alternatives a person seriously considers affects intention-behaviour consistency, through its impact on confidence in one's intention. Sheppard, Hartwick, & Warshaw (1988) found that intention-behaviour consistency depended on whether intentions were formulated as plans or as expectations. Additional research is needed before statements about these processes can be made with sufficient certainty.

In our search for a dependent variable in which all possible aspects of the various adaptive options were considered carefully, we decided to choose a variable that could be found at the furthest possible end of the appraisal - behaviour chain: choice. In the study reported by Dabholkar (1994), this variable was also used as a proxy for actual behaviour. The choice variable is assumed to incorporate considerations regarding both response efficacy and self-efficacy with respect to all options with the highest degree of certainty. Convergent validity with intention measurements for the separate choice options should be high.

Consistency

Several different problem scenarios were designed and used in the experiment to cover a representative selection of problems in the domain. Scores for the separate scenarios are aggregated and combined into one scale resulting in one 'choice for assimilation'-score for the entire set. The internal consistency of the choice scores - computed after factor analysis revealed that the scale consisted of one factor - was satisfactory for both the choice measurement and the intention measurement (Cronbach's alpha = .72 and .75 respectively). The dependent variable, choice for assimilation, was computed as the factor score, resulting from a factor analysis on the separate scores, which rendered one factor.

Convergent reliability

An alternative for measuring choice is measuring separate intention scores for the three options. The combined overall intention score that results from the comparison of these intentions should be highly correlated with the eventual choice (Sheppard et al., 1988). In order to study the convergent validity of the choice measurement with the intention scores, relative intention scores for assimilation were computed by subtracting the mean of the other two intention scores from the assimilation intention score for every problem scenario. The correlation (convergent validity) between the aggregated choice and intention scores was .82, which indicates a high convergent reliability of the choice measurement with intention measurements.

Test-retest reliability

Test-retest reliability of the scenario method and choice variable was computed as the correlation between the baseline and follow-up scores. The correlation between these aggregated scores was .73, which is satisfactory and better than the test-retest correlation for the intention measurement (.50). It was concluded that the scenario and questionnaire approach that was developed and the corresponding choice measurement constitutes a robust and reliable method for investigating concrete adaptive problem solving in hypothetical situations.

5.2.3 Participants

Eighty-six older persons, 65 to 85 years old (M = 74.4, SD = 5.19), participated in the experiment. The sample consisted of 66 female and 20 male participants, all living in independent housing, with an education level that was representative for this age group. Participants were recruited via choirs and folk-dance groups for older people in several cities

in the south of the Netherlands. Nine questionnaires were discarded, due to a lack of data. Thus, 77 questionnaires were used in the final analyses.

5.2.4 Design and Materials

The experiment constituted a two (Self-efficacy: high vs. low) by two (Flexibility: high vs. low) by two (Tenacity: high vs. low), between-participants design. The first factor was experimentally manipulated, while the latter two were measured and thus can be treated as quasi-experimental factors. All analyses of variance (ANOVAs) were conducted according to this design. Participants were interviewed individually by two trained interviewers, to obtain the highest quality of data. As a cover story, participants were told that the aim of the study was to examine the needs and preferences of older persons with regard to independent living. The interviews lasted approximately one hour.

Six problem scenarios were used, as described and tested in sections 5.2.1 and 5.2.2. The dependent variable, choice for assimilation, was deduced from the scores of the assimilative solutions for the separate scenarios. First a factor analysis was performed on these scores, which rendered one factor with an eigenvalue of 2.21 (37 % of variance explained). All six variables had high loadings on this factor (> .45).[4] The factor score was calculated and used as the dependent variable 'choice for assimilation'.

5.2.5 Manipulation and measurement of variables

Manipulation of self-efficacy

The descriptions of the problem situations as well as the solutions were identical for the two experimental conditions. However, a statement was added to the description of the environmental modification, in which self-efficacy was manipulated using a combination of instructions and persuasion (an example is given in Appendix B). Only these statements differed for the two experimental versions (fine-tuning of these manipulations required a number of pilots); self-efficacy judgments related to the two alternative strategies were not manipulated. Since control is only said to apply to assimilative strategies, self-efficacy regarding the purely accommodative options was not an issue. However, for socially directed adaptations, which sometimes have assimilative characteristics too, the situation was somewhat more complicated. It was therefore decided to formulate the social adaptations in such a way that if control perceptions were relevant, they would be high, i.e. the social

[4] Although the factor analysis clearly rendered 1 factor, Cronbach's alpha was somewhat disappointing (.54). However, since the reliability and consistency tests, described in section 5.2.2, indicated that the scale was robust, the scores were still aggregated across the six scenarios. The finding can partly be explained by the skewed distributions of the scores, which concentrated around the extremities; this suppresses mutual correlations.

adaptations were all easy to attain. Participants were randomly assigned to one of the two Self-efficacy conditions.

Tenacity and Flexibility

The dispositions tenacity and flexibility were measured using the translated scales of Brandtstädter & Renner (1990). Both scales consisted of 15 items, measured on 5-point Likert scales (I do not agree at all (0) - I agree completely (4)). The flexibility scale consisted of facets of accommodative processes related to disengagement, reorientation, and acceptance: palliative comparisons, selective focusing on favourable effects, construction of meaning, compromising and rescaling of aspiration levels, and flexible disengagement from blocked goals. Tenacity items referred to assimilative tendencies: maintaining a chosen course of action even under difficulty or increasing the valence of blocked goal perspectives. The internal consistency of the flexibility scale was satisfactory (Cronbach's alpha = 0.76, M = 2.76, SD = 0.50), the consistency of the tenacity scale was modest (Cronbach's alpha = 0.59, M = 2.06, SD = 0.46). Aspects of convergent and discriminant validity, and psychometric properties of these scales are discussed in Brandtstädter and Renner (1990). The low correlation between the flexibility and tenacity scales (Pearson r = 0.28, p < .05), in accordance with earlier uses of the scales, indicates the independence of the two constructs. Participants were categorized in the low or high Flexibility and the low or high Tenacity group respectively, based on a median-split (2.8 and 2.0 respectively).

Checks and dependent variables

After the tenacity and flexibility scales had been filled out, the problem situations were read aloud by the interviewer and discussed one by one: first one filler-problem without manipulations and then six experimental problems (in random order). Respondents were instructed to carefully listen to each story and to imagine themselves in the situation described and then answer the questions that followed. They were also told that there were no right and wrong answers and that it was important to express how they really felt.

First participants were asked to report the option they would choose and then which of the two alternatives they would choose second. This resulted in a rank ordering of the three options (first choice = 2, second choice = 1, third choice = 0). Then a self-efficacy manipulation check followed. The check contained three unipolar 5-point items concerning implementation of the environmental modification: "Do you think it is difficult to ..." (1 = very difficult, 5 = not at all); "Do you think one has to invest a lot of time and effort into ..." (1 = no, 5 = yes, definitely); "Do you think you would succeed in ..." (1 = no, 5 = yes, definitely). The internal consistency of the total scale was high: Cronbach's alpha = .88 (18

items). Subsequently, participants rated the response efficacy of all three adaptive strategies on 11-point scales (0% solved - 100% solved). We purposefully differentiated considerably between the various scales to prevent reponse set. These scores were also summed over the six scenarios, resulting in three scores that represented the perceived quality of the three types of solutions (environmental, social, and personal).

5.3 Results

In section 5.1 it was hypothesized that both self-efficacy and tenacity would have a positive main effect on choice for assimilation. Thirdly, we expected that the effect of flexibility would be moderated by self-efficacy, in other words, an interaction effect would occur. These effects will be tested in the present section, using analysis of variance. We will then explore whether any of these effects is mediated by judgments of response efficacy. But first we will check whether the manipulation of participants' self-efficacy regarding the assimilative solutions was successful.

Manipulation check

In order to test the manipulation of Self-efficacy and its independence of the quasi-experimental factors, Tenacity and Flexibility, an ANOVA was performed with the efficacy check as the dependent variable (t-tests had already proved that the self-efficacy manipulation was significant for every separate scenario). The main effect of Self-efficacy was positive and significant, $F(1, 69) = 13.01$, $p = .001$. The remaining factors had no significant effect, nor were there any significant interaction effects. It was concluded that the manipulation was successful.

Analysis of variance

The dependent variable in this study is the choice for assimilation. Mean values for every cell are given in Table 5.1. This variable was subjected to an ANOVA. The analysis rendered a significant main effect of both the Self-efficacy version, $F(1,69) = 4.45$, $p = .039$, and Tenacity, $F(1,69) = 5.84$, $p = .018$. In addition, we found a significant interaction between Self-efficacy and Flexibility, $F(1,69) = 5.63$, $p = .020$.

A follow-up analysis, testing the effects of Self-efficacy for the two Flexibility conditions separately, rendered a strong and significant effect in the high Flexibility condition, $F(1,69) = 7.11$, $p = .010$, and no significant effect in the low Flexibility condition, $F(1,69) = 0.07$, $p = .791$. The remaining effects were not significant.

Table 5.1

Assimilation choice by Efficacy version, Flexibility, and Tenacity

		Efficacy version			
		low		high	
low Flexibility					
	low Tenacity	-0.47	(0.89)	-0.24	(1.07)
	high Tenacity	0.56	(1.05)	0.23	(0.80)
high Flexibility					
	low Tenacity	-0.28	(0.82)	0.57	(0.76)
	high Tenacity	-0.10	(0.56)	0.91	(0.68)

Note. Values are means; the values enclosed in parentheses are standard deviations.

The two main effects are visualized in Figure 5.1. Both Self-efficacy and Tenacity have a positive effect on the choice of the assimilative adaptation. These findings are in accordance with the expectations. The interaction effect between Self-efficacy and Flexibility is visualized in Figure 5.2. We had predicted that Self-efficacy would mainly have an effect in the high Flexibility condition. This is in accordance with the findings. It is, however, somewhat striking that this effect can mainly be attributed to a stronger assimilative tendency in the high Self-efficacy condition, whereas we had mainly predicted a stronger tendency to accommodate in the low Self-efficacy condition. In the low self-efficacy condition, flexible persons are indeed shown to modify their goals and choose an *accommodative* more easily, but in addition in the high self-efficacy condition they show higher *assimilation* scores than less flexible persons.

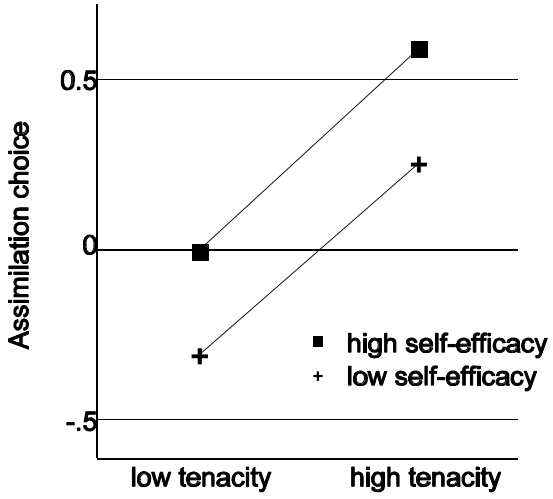


Figure 5.1: Main effects of Efficacy and Tenacity

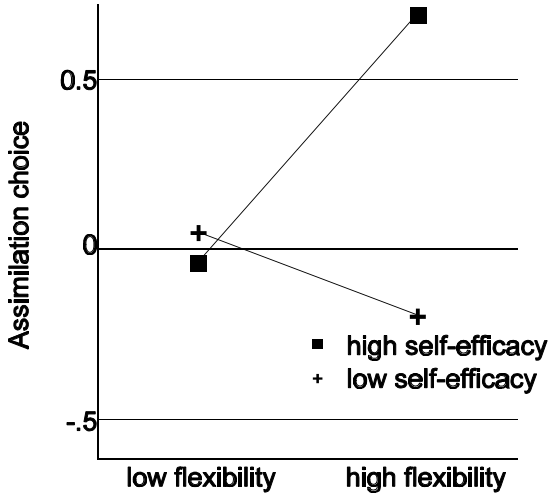


Figure 5.2: Interaction between Efficacy and Flexibility

The goal of this study was to gain more insight into the actual coping process and the various appraisals that influence it. It would be relevant to see whether self-efficacy and tenacity influence the choice of an adaptive strategy directly, or whether these effects are mediated by appraisals of response efficacy (appraised quality of the adaptive strategies).

Analysis of mediation by response efficacy

Two additional analyses are needed to distinguish a mediator effect, showing a significant effect of the factor on the mediator and the disappearance of the effect of this factor in an ANOVA in which the mediator is also entered as a factor (Baron & Kenny, 1986). For this reason, ANOVAs with the response efficacy scores were performed first, an analysis of covariance (ANCOVA) came second in which the response efficacy scores were entered as covariates.

The response efficacy scores for the three types of solutions were subjected to ANOVAs with the original three factors (Self-efficacy, Tenacity, and Flexibility). The analysis with the response efficacy of the assimilative solution rendered a marginally significant effect of Tenacity, $F(1,68) = 3.40$, $p = .07$. More tenacious people judged the assimilative solutions as more effective. There were no other significant effects, nor were there significant effects in the analyses of the remaining two response efficacy scores. The Tenacity effect on choice for assimilation therefore is the only effect that is possibly mediated by response efficacy.

Subsequently, an analysis of covariance (ANCOVA) was performed with the same factors with the response efficacy scores entered as covariates. The regressions of two of these three covariates were significant: the response efficacy score of the assimilative solution had a positive effect on choice of this strategy, $F(1,65) = 8.30$, $p = .005$; the response efficacy score of the personal accommodative strategy had a negative effect, $F(1,65) = 6.58$, $p = .013$. These findings seem fairly logical: the higher the perceived quality of the assimilative solution is, the higher the chance that the person will choose this option. The opposite logically holds for the alternative solutions, though there was no significant effect of the social accommodative solution. Besides these covariates, the main effect of the Self-efficacy version remained significant, $F(1,65) = 4.83$, $p = .031$; the interaction between Self-efficacy and Flexibility also remained unchanged, $F(1,65) = 5.43$, $p = .023$. Hence we conclude that these effects are not mediated by response efficacy appraisals. However, the effect of Tenacity did not remain significant, $F(1,65) = 2.11$, $p = .15$. These results indicate that Tenacity is probably mediated by response efficacy appraisals.

5.4 Discussion

The results of this study showed that self-efficacy had a positive effect on the choice for assimilative coping options. In situations where self-efficacy is high, people are more likely to choose assimilative solutions. This effect remained present even when the results were controlled for the perceived quality of the various adaptive options. Self-efficacy therefore influences choice behaviour directly, independent of the perceived quality or response efficacy of the various adaptive options. This explains why (older) people reject assimilative, proactive adaptations of the physical environment, even when they are aware of them and recognize their benefits. Beck and Lund (1981) suggested that beyond some adequate level of response efficacy, expectations of personal efficacy are the critical factor in determining subsequent intention and behaviour. This finding, however, resulted from a study referring to a one-option situation, whereas in the present study, three adaptive strategies were presented to the respondents. The choice process (pertaining to an analysis of the expected costs and benefits of the various alternatives) will likely be more complex in a situation of multiple options. The present study showed that perceived barriers and beliefs of personal inefficacy can prevent people from attaining their goals. One should note, however, that although the effect of self-efficacy was considerable, the regressions of the response efficacy scores were also significant and should not be overlooked.

Tenacity had a significant main effect on the choice of the adaptive strategy. Relatively tenacious persons showed higher assimilation scores than less tenacious persons. The second ANOVA showed that this effect was mediated by the evaluation of the strategies' response efficacies: more tenacious people judged the assimilative adaptations as more effective and hence opted for these strategies more often. Tenacious persons are said to be more persistent in the face of set-backs or obstacles; they are focused on solving the problem instrumentally, at attaining their goal. The present study illustrates that this goal-directedness is reflected in a preference for the assimilative solutions that is not only visible in the choice of a certain strategy, but already in the evaluation of the various options: tenacious persons see the assimilative options as more effective than less tenacious persons, because these strategies are goal-directed, which is in close accordance with the way they usually handle problems.

There was no main effect of the personal disposition Flexibility. This implies that flexible persons do not give up on attaining assimilative adaptations sooner than inflexible persons. There was, however, an interaction between self-efficacy and the flexibility disposition. This interaction was largely in agreement with our predictions. In situations of low self-efficacy, flexible persons modify their goals and choose accommodative strategies more easily. However, in situations of high self-efficacy, the opposite effect occurred: flexible persons

showed higher intentions to choose assimilative solutions than less flexible persons. One might argue that flexible persons are more open to possibilities and impossibilities in given problem situations and for this reason adapt in more optimal ways. This is in accordance with Brandtstädter and Renner (1990) who argue that people with high scores on both the tenacity and flexibility scales are best equipped to deal with various problems and will be able to keep a positive and optimistic view of life. These persons pursue their goals as long as possible, but are able to cope with problems that cannot be solved. Still, the fact that the positive effect in the high self-efficacy condition is stronger than the hypothesized negative effect in the low self-efficacy condition raises some doubts concerning the robustness of this finding and calls for a replication in a second study.

In spite of the satisfactory internal consistency of the assimilation-choice scale in the pilot study, the consistency of this scale in the present experiment was modest. Though this can probably, at least to a large part, be explained by the skewedness of the separate rank scores, the findings should be regarded with some scepticism. Additional research is needed before strong conclusions can be drawn. An alternative or additional explanation for the inconsistency in findings for the various scenarios lies in the fact that the problems that were used in this study came from different domains of functioning, reflecting goals with varying centrality or importance. This could significantly influence the commitment of individuals in the adaptation process and, according to Brandtstädter, Rothermund, & Schmitz (in press), could have a strong influence on the choice between assimilation and accommodation. The effects of the factors in this experiment may also vary with differing importance of the goals that are at stake. It would, for instance, be interesting to see whether the role of self-efficacy is as strong for important as for less important problems, or whether important problems could prompt persons to challenge their perceptions of personal efficacy. One could also argue that flexibility should mainly result in accommodation in domains that are of less importance to the person. These considerations, both very much in line with Baltes and Baltes' (1990) concept of successful ageing, indicate that studying the role of importance, self-efficacy, and dispositions simultaneously could provide more insight into the actual coping process.

Implications

In keeping with our expectations, the results of this study show that perceptions of control are highly relevant with regard to adaptive behaviour in concrete problem situations in the home. Bandura's self-efficacy concept proved to be a useful construct to account for the appraisals of personal control in this model. Findings also support the relevance of two dispositions related to coping behaviour - tenacity and flexibility - for the explanation of choice behaviour in concrete adaptation situations. However, these results should be regarded with some scepticism: the effect of Tenacity did not vanish completely in the second ANOVA and its effect on response efficacy was only marginally significant. We conclude that although

the effect of Tenacity on adaptive behaviour is clear, the possibly mediating role of appraisals of response efficacy should be further investigated. The same holds for the unexpectedly positive tendency towards assimilation for highly flexible persons. These conclusions call for additional research.

In view of the above discussion, a second study was performed that had two major goals: first to replicate the findings of this first experiment, to support their reliability and second to further investigate the role of problem importance in the process of adaptive behaviour. This study is reported in the following chapter. We will therefore save the formulation of practical implications of the findings of the present study for the discussion of the results of this second study in the following chapter.

CHAPTER SIX

SELF-EFFICACY AND IMPORTANCE[5]

In Chapter five we discussed the situation of an older woman who had become hard of hearing. She experienced problems using the telephone and was presented with three options: using the computer, asking help from neighbours, and giving up the telephone. These options ranged from assimilative to accommodative. We argued that the choice of this woman depended, among other factors, on personal dispositions and her appraisal of the feasibility of the various strategies. The results of the study presented in Chapter five supported these thoughts. In earlier discussions, however, we discussed how the individual's commitment to certain goals would also influence adaptive behaviour. If, for instance, this woman is strongly committed to maintaining close contact with her children, she will probably be more willing to spend time and effort in learning to use the computer. If, on the other hand, her children lived close to her and she only needed the phone to keep in touch with distant relatives, the required time and effort would raise a barrier that she might not be willing to break through.

6.1 Goal of the Study

The experiment described in the previous chapter demonstrated that self-efficacy (perceived personal efficacy regarding the implementation and use of a technical adaptation) significantly influenced adaptive behaviour, correlating positively with assimilation. In the same experiment, the parts played by two personal dispositions - tenacity and flexibility - were studied. Tenacity had a positive effect on assimilation; flexibility interacted with self-efficacy: the effect of self-efficacy was stronger for respondents with a strong flexibility disposition.

In this second experiment, we not only manipulated self-efficacy, but also the individual's commitment to solving the problem, as a result of the differing relevance or importance of the activity that was hindered. The mechanism underlying the effect of importance differs from the one underlying the role of self-efficacy. When confronted with a stressful situation (a problem), individuals have two types of appraisal: primary and secondary. These terms, given by Lazarus and Folkman (1984b), do not refer to the order in which these appraisals occur, or

[5] Adapted from Slangen - de Kort, Midden, Aarts, & van Wagenberg (1998).

to the primacy of one over the other. Primary appraisal refers to the question ‘what is at stake for me?’; secondary appraisal refers to the question ‘what, if anything, can be done about it?’ Self-efficacy appraisals are mainly said to fall in the second category, however, appraisals of importance fall in the first category. The more is at stake for the person, the stronger his/her commitment.

The difference made between these two types of appraisal does not imply perfect independence. The appraisal processes influence each other mutually. The various adaptational alternatives are judged differently, depending on the relevance of a particular problem. In addition, the importance of a particular problem can be re-evaluated if assimilative strategies seem absent or unattainable, although at that point the adaptational process is in fact well on its way already.

In light of the considerations described above, we expected the importance of the problem to interact with self-efficacy. As the importance of a problem increases, the person is more committed to finding the most optimal solution and therefore be more willing to expend time and energy in attaining it. In the present study, these considerations primarily apply to the assimilative, technical solution. For important problems, with much at stake, perceptions of low self-efficacy should have a smaller impact than for less important problems, where the person is sooner expected to settle for a somewhat less assimilative adaptation. We therefore hypothesized the effect of self-efficacy to be most visible in the low-importance condition.

The dispositions tenacity and flexibility were again measured and taken into account in the present study, to replicate the findings of the previous experiment. We therefore expected a main effect of Tenacity, possibly moderated by Self-efficacy (this interaction was not found in the first experiment). In addition, as in the previous experiment, we hypothesized an interaction between Self-efficacy and Flexibility. Originally we expected a stronger shift to accommodation, away from assimilation, for flexible persons than for inflexible persons in the low self-efficacy condition. This effect was present, but in addition we found an unexpectedly strong positive shift in assimilation in the high self-efficacy condition for flexible persons. If the effect is robust, we should be able to replicate it in the present experiment. We will conclude this chapter with a meta-analysis in which the two data-sets are combined.

6.2 Method

6.2.1 Participants and design

Participants were 199 older individuals (140 female, 59 male), with ages ranging between 61 and 84 (M = 71.73, SD = 5.07), who were paid for their participation. Participants were independently living persons recruited via the Catholic Association of Senior Citizens (KBO) in the south of the Netherlands (none of these persons had participated in the earlier study). Their education level was representative for this age group in the Netherlands (Timmermans,

1993). Participants were randomly assigned to one of the four experimental conditions.

The experiment constituted a two (Self-efficacy: high vs. low) by two (Importance: high vs. low) by two (Flexibility: high vs. low) by two (Tenacity: high vs. low), between-participants design. The first two factors were experimentally manipulated, the latter two were measured and thus can be treated as quasi-experimental factors. Participants were interviewed individually by trained interviewers. As a cover story, participants were told that the aim of the study was to examine the needs and preferences of older persons with regard to independent living. The interviews lasted approximately one hour.

6.2.2 Materials

As in the first experiment, hypothetical problem scenarios were used to study the adaptive behaviour; four out of the previous six were selected. The manipulation of self-efficacy remained unchanged: it involved persuasive statements that were added to the descriptions of the assimilative strategies. In order to manipulate commitment via importance of the problem, the four scenarios were rewritten with two versions of each: one in which the consequences were very serious and one in which they were only moderately serious. In the high importance version, more was at stake for the person than in the low importance version. Descriptions are given in Appendix C. The descriptions of the solutions remained unchanged.

Independent variables

The interview started with the items measuring tenacity and flexibility. Participants were asked to fill out the questionnaire themselves. The scores were treated in the same way as reported in Chapter five, after which participants were categorized in the low or high flexibility and low or high tenacity group, based on a median-split. The internal consistency of the flexibility scale was moderately high (Cronbach's alpha = .71, M = 2.73, SD = 0.52, median-split at 2.7), as was that of the tenacity scale (Cronbach's alpha = .71, M = 2.22, SD = 0.58, median-split at 2.1). The median-split values are equivalant to the values in the first experiment.

Checks and dependent variables

The four problems were discussed in random order; the order in which the three adaptive strategies were presented varied across the problems. Following every description of a problem and the corresponding solutions, a set of questions were presented. Participants were asked to imagine that they were in the situation that was described. They were also told that there were no right and wrong answers and that it was important to express how they really felt.

First participants were asked to report the option they would choose and then which of the two alternatives they would choose second. This resulted in a rank ordering of the three options (first choice = 2, second choice = 1, third choice = 0). The dependent variable in this study was constructed in the same way as in the previous study. The scores of the assimilative options for the four scenarios were factor analysed and the resulting factor score was used as the dependent variable: choice for assimilation. The factor loadings were .68, .66, .44, and .65 respectively.[6]

Then a self-efficacy check followed. It contained three unipolar 5-point items concerning the implementation of the technical adaptation and was similar to the one in the previous experiment (see section 5.2.4). For every problem, we checked whether the self-efficacy manipulation was strong enough. The 3 items were combined and a t-test was performed (criterion: $p < .05$). When all t-tests proved significant, all the items were combined into one self-efficacy check scale (scores ranging from 1 to 5). The internal consistency of this scale was satisfactory: Cronbach's alpha = .73 (12 items). Subsequently, participants rated the response efficacy of all three adaptive strategies on 11-point scales (0% solved - 100% solved). These scores were also summed over the four scenarios, resulting in three scores that represented the perceived quality of the three types of solutions (environmental, social, and personal).

After the four problem scenarios were discussed, some demographic variables were measured (age, gender, education level) and lastly, the importance check, consisting of two types of measurements, was filled out. First, importance of the problem was measured on linear scales of 10 cm. The ends were labelled 'not important' and 'of vital importance'. The scenarios were read out loud, one by one, in the same order as they had been discussed, but only after one new scenario had been read. This new scenario was identical for the two importance conditions and served as an 'anchor'. Participants were asked to place a x-mark on the lines, indicating the importance of each of the five problems. Then participants received five cards with the five scenarios (four experimental plus one anchor scenario) and were asked to read them again, and subsequently place them on a 6-point scale with all points labelled (ranging from 1 = 'not important' to 6 = 'terribly important'). For every problem, both scores were standardized and summed. Internal consistencies ranged from .57 to .66. These scores were also summed over the scenarios, resulting in one importance check variable. This concluded the interview. Afterwards, the participants were debriefed. Participants were not aware of the intentions of the study.

[6] Although the factor analysis clearly rendered 1 factor, Cronbach's alpha was low (.44). However, since the reliability and consistency tests (section 5.2.2) indicated that the scale was robust, the scores were still aggregated across the four scenarios. The finding can partly be explained by the skewed distributions of the scores, which suppressed mutual correlations.

6.3 Results

The first goal of this study was to replicate the findings of the first experiment. Thus it was hypothesized that both self-efficacy and tenacity would have a positive main effect on choice for assimilation and that flexibility would show an interaction with self-efficacy. In addition, we hypothesized that there would be an interaction between importance and self-efficacy, showing a stronger effect of importance in low self-efficacy conditions. These effects will be tested in the present section, using analysis of variance (ANOVA). Subsequently we will explore whether any of these effects is mediated by judgments of response efficacy. As in the previous chapter, this is analysed by in two steps: first the response efficacy scores are subjected to ANOVAs, then an ANCOVA is performed with choice for assimilation as dependent variable and the response efficacy scores as covariates. But first we will check whether the manipulations of participants' self-efficacy regarding the assimilative solutions and the importance of the problems was successful.

Manipulation check

To test the manipulation of self-efficacy and its independence of the other factors, an ANOVA was performed, with the self-efficacy check as the dependent variable and Self-efficacy, Importance, Tenacity, and Flexibility as independent factors. Only the main effect of Self-efficacy proved significant, $F(1, 181) = 18.06$, $p < .001$. A similar analysis was performed with the importance check as the dependent variable. Only the main effect of Importance was significant, $F(1, 179) = 25.38$, $p < .001$. It was concluded that both manipulations were successful and not disturbed by the remaining factors.

Analysis of variance: Choice for assimilation

As a first step in the analysis, the variable 'choice for assimilation' was subjected to an ANOVA with the four factors as independent variables. The analysis rendered a significant main effect of both the Self-efficacy version, $F(1,178) = 14.23$, $p < .001$, and Tenacity, $F(1,178) = 6.13$, $p = .014$. In addition, we found a significant interaction between Self-efficacy and Tenacity, $F(1,178) = 4.55$, $p = .034$ (the effects are visualized in Figure 6.1). As in experiment one, both Self-efficacy and Tenacity have a positive effect on assimilation. The effect of Tenacity is strongest in the low Self-efficacy condition.

Table 6.1

Assimilation choice by Self-efficacy, Importance, Flexibility, and Tenacity

	Self-efficacy version							
	low				high			
	Importance version				Importance version			
	low		high		low		high	
low Flexibility								
low Tenacity	-0.60	(0.99)	-0.84	(1.44)	0.60	(0.62)	0.27	(0.87)
high Tenacity	0.06	(0.77)	0.43	(0.86)	0.07	(0.99)	0.36	(0.77)
high Flexibility								
low Tenacity	-0.54	(0.95)	-0.41	(0.99)	0.45	(0.63)	-0.37	(1.17)
high Tenacity	0.10	(0.76)	-0.37	(1.52)	0.42	(0.71)	0.29	(0.83)

Note. Values are means; the values enclosed in parentheses are standard deviations.

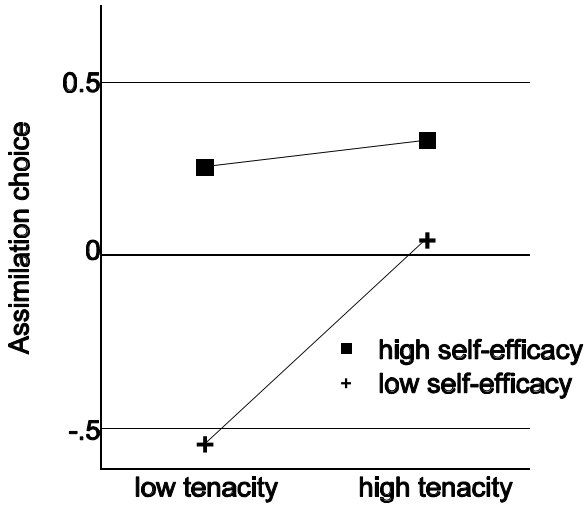


Figure 6.1: Effects of Efficacy and Tenacity on intention to choose assimilation

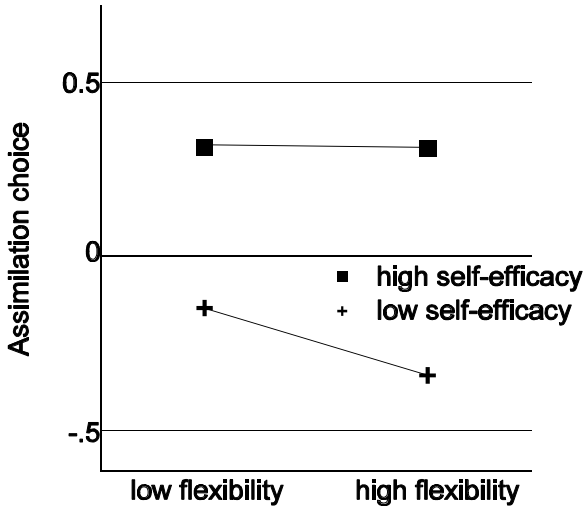


Figure 6.2: Effects of Efficacy and Flexibility on intention to choose assimilation

The interaction between Self-efficacy and Flexibility was not significant, $F(1,178) = 0.042$, $p = .837$ (Figure 6.2). There was, however, a significant three-way interaction between Self-efficacy, Flexibility and Tenacity, $F(1,178) = 4.187$, $p = .042$. A more detailed analysis of this effect is illustrated in Figure 6.3. In the low flexibility condition, both main effects and the interaction effect of Self-efficacy and Tenacity are significant (all $p < .05$). In the high flexibility condition, only the main effect of Self-efficacy is significant ($p = .002$), the effect of Tenacity is much weaker ($p = .163$), and the interaction effect is absent ($p = .643$).

The remaining effects were not significant. The findings will be discussed after the analyses of the response efficacies and ANCOVA.

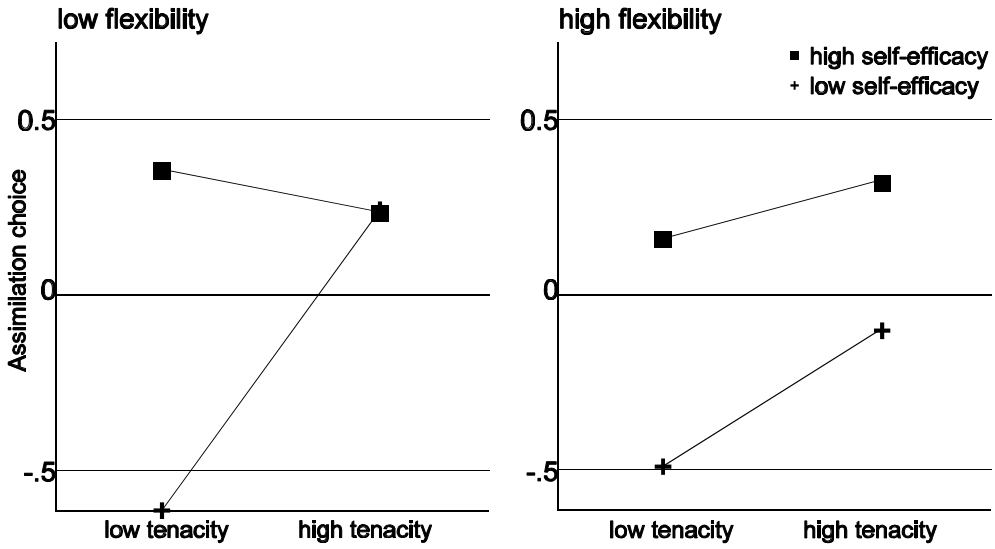


Figure 6.3: Three-way interaction between Self-efficacy, Flexibility and Tenacity on intention to choose assimilative solution

Analyses of variance: Response efficacies

Part of the variance in the choice for assimiliation can be explained by the perceived qualities (response efficacies) of the three types of solutions. In addition, in the previous experiment we found that the effect of Tenacity was mediated by the response efficacy of the assimilative solution. The second step in the analysis therefore involved ANOVAs of the response efficacy scores of the three types of adaptive strategies, followed by an ANCOVA on choice for assimilation with the same factors and, additionally, the response efficacy scores entered as covariates. These analyses should indicate whether any of the significant effects in the first analysis are mediated by these perceptions. The analyses may also shed more light on the absence of effects of Importance. Relevant results are reported in Table 6.2.

For the response efficacy score of the assimilative solution, a significant effect of Tenacity emerged. Highly tenacious persons judged these strategies as more effective than less tenacious persons. Self-efficacy and Importance also had significant main effects on this response efficacy. However, these effects were both qualified by the interaction effect between Self-efficacy and Importance, as illustrated in Figure 6.4. In the figure we see the exact effect that was hypothesized on the choice for assimilation: response efficacy is only influenced by Self-efficacy level in the low Importance condition; in the high Importance condition, Self-efficacy does not affect response efficacy judgments. Finally, a similar

interaction effect of Self-efficacy and Flexibility reached significance: response efficacy is only influenced by Self-efficacy level in the low flexibility condition. This interaction is visualised in Figure 6.5.

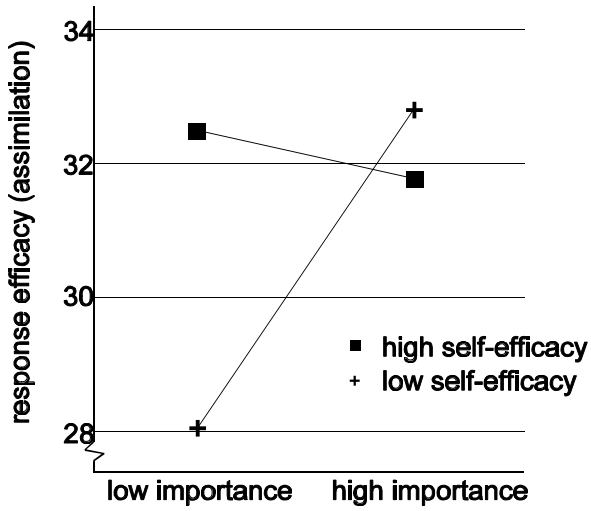


Figure 6.4: Response efficacy of assimilation by Efficacy and Importance

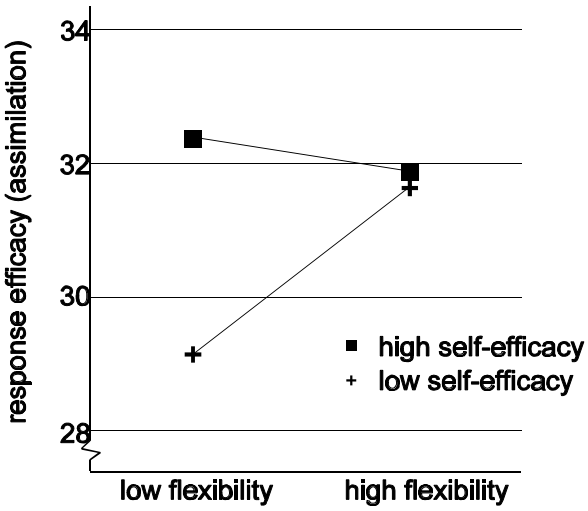


Figure 6.5: Response efficacy of assimilation by Efficacy and Flexibility

The analysis with the response efficacy of the social adaptation rendered a strong significant main effect of Importance, indicating higher response efficacy judgments (for identical solutions) in problems of higher importance. The main effect of Flexibility also reached significance: flexible persons judged these adaptations more positively than less flexible persons.

The third analysis, with the response efficacy of the personal solution as the dependent variable, did not render significant main effects or interaction effects, except a significant 4-way interaction, which probably is not stable and impossible to interpret.

The first conclusion that can be drawn from these analyses is that so-called ‘primary appraisals’ clearly influence ‘secondary appraisals’. Variations in the importance of the problem are reflected in judgments about the various adaptive strategies for this problem. The interaction effect between Self-efficacy and Importance, which was hypothesized but not found for the choice of the assimilative strategy, was present for response efficacy. The effect of Self-efficacy was moderated by Importance: response efficacy was only influenced by the Self-efficacy level in the low Importance condition. However, we also found a significant effect of Importance on the evaluation of the socially directed strategy: requesting help from others seems better accepted for problems of higher importance. This at least partly explains why the interaction effect of Importance was not found on the choice variable: with increasing importance, other options also became more attractive, which disturbed the pattern for the final dependent variable (choice for assimilation).

Personal dispositions also showed significant effects on response efficacy judgments. Tenacious persons judged assimilative strategies more positively than less tenacious persons, while flexible persons scored higher on response efficacy evaluations of the social strategies than less flexible persons. Whether the effect of Tenacity on choice for assimilation is mediated by the response efficacy judgment of the assimilative option will be investigated in the following subsection.

Table 6.2
Results of analyses of variance on three response efficacies

	environmental adaptation		social adaptation		personal adaptation
	F		F		F
Self-efficacy (SE)	3.77	*	0.06		1.94
Importance (I)	4.19	*	12.89	***	0.48
Flexibility (F)	2.09		5.48	*	1.61
Tenacity (T)	8.08	**	0.03		3.20
SE * I	8.62	**	0.01		0.58
SE * F	3.92	*	1.68		0.19

Note. Results based on full model ANOVA, residual df 180, 179 and 180 respectively. *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$.

Analysis of covariance: assimilation with response efficacies as covariates

As the last step in the analysis, choice for assimilation was subjected to an ANCOVA, with the three response efficacy scores as covariates. The regressions of all three covariates were significant: the response efficacy score of the assimilative solution had a positive effect on choice of this strategy, $F(1,174) = 24.43$, $p < .001$; the response efficacy scores of the social and personal accommodative strategies had a negative effect, $F(1,174) = 14.63$, $p < .001$, and $F(1,174) = 17.38$, $p < .001$. These findings are in accordance with expectations: the higher the perceived quality of the assimilative solution is, the higher the chance that the person will choose this option. The opposite logically holds for the perceived response efficacies of the alternative solutions.

Besides these covariates, the main effect of the Self-efficacy version remained significant and almost unchanged, $F(1,174) = 14.83$, $p < .001$. We therefore conclude that self-efficacy

influences the choice of the adaptive strategy directly, not mediated by response efficacy judgments.

The effect of Tenacity did not remain significant, $F(1,174) = 0.95$, $p = .33$; the interaction between Self-efficacy and Tenacity was only marginally so, $F(1,174) = 2.04$, $p = .08$. Since Tenacity had a significant influence on the response efficacy judgment of the assimilative solution, this implies that the effect of Tenacity on the choice for assimilation is indeed mediated by perceptions of the response efficacy judgment.

As in the ANOVA with choice for assimilation, there was no significant interaction between Self-efficacy and Flexibility or between Self-efficacy and Importance.

6.4 Meta-analysis: merging experiments one and two

The designs of the two experiments were very similar, which made it possible to perform a meta-analysis with a combined data set. Logically, only the effects of factors that were included in both studies could be tested in these analyses (Self-efficacy, Tenacity, and Flexibility, and sometimes the response efficacy scores as covariates), plus the effect of one additional factor: Experiment (one vs. two). This last factor did not render any significant (interaction) effects, indicating that the results of the two studies were similar. We will now briefly report the results of this meta-analysis, before turning to the discussion.

In both studies, Self-efficacy had a significant main effect on the choice for assimilation in hypothetical problem scenarios. The effect in the meta-analysis was also highly significant, $F(1,255) = 14.90$, $p < .001$. When the results were controlled for the response efficacy of the various adaptive options, the main effects of this factor remained present and equally high, $F(1,250) = 16.17$, $p < .001$.

In the first experiment, tenacious persons showed higher assimilation scores than less tenacious persons. This finding was replicated in the second experiment, although there it was moderated by self-efficacy: the effect of Tenacity was strongest in situations of low self-efficacy. The results of the meta-analysis again only showed a significant main effect of Tenacity, $F(1,255) = 10.46$, $p = .001$; the interaction effect with Self-efficacy did not reach significance, $F(1,255) = 2.49$, $p = .116$.

In both experiments, the Tenacity effect was mediated by response efficacy judgments: more tenacious people judged the assimilative adaptations as more effective and hence opted for these strategies more often. The findings in the meta-analysis also significantly indicated mediation: the effect of Tenacity on response efficacy of the assimilative option was highly significant, $F(1,256) = 9.35$, $p = .002$, and the effect of Tenacity on choice for assimilation

disappeared when response efficacy was entered as a covariate, $F(1,250) = 3.23$, $p = .074$.

It was hypothesized that flexible persons would choose accommodation more often than less flexible persons, but only in situations of low self-efficacy. This trend was visible in both experiments. Moreover, in the first experiment, while flexible persons were less likely to choose assimilation than inflexible persons in the low-self-efficacy condition, they were more likely to choose this same option in the high self-efficacy condition. However, this latter effect was absent in the second experiment and although the trend towards accommodation in the low efficacy-condition was visible, the interaction between Flexibility and Self-efficacy was not significant in the second experiment. It did, however, reach significance in the meta-analysis, both without or with response efficacies as covariates, $F(1,255) = 3.96$, $p = .048$; $F(1,250) = 4.03$, $p = .046$, respectively.

The three-way interaction effect between Self-efficacy, Flexibility, and Tenacity, which emerged in the second experiment, did not reach significance in the meta-analysis, $F(1,255) = 2.55$, $p = .111$. However, to illustrate the potential underlying process, the effect is visualized in Figure 6.6, based on the combined data-set. The figure points out the danger of unflexibility: in situations of low perceived self-efficacy, participants in the low flexibility group who were also relatively untenacious gave up their goals more often than participants in the high flexibility group. On the other hand, unflexible, tenacious participants scored as high on assimilation for low self-efficacy situations as for high self-efficacy situations, in other words they refused to give up goals, no matter how demanding the situation was. Although there is a danger in giving up goals too easily, the opposite stance is equally threatening to a person's well-being.

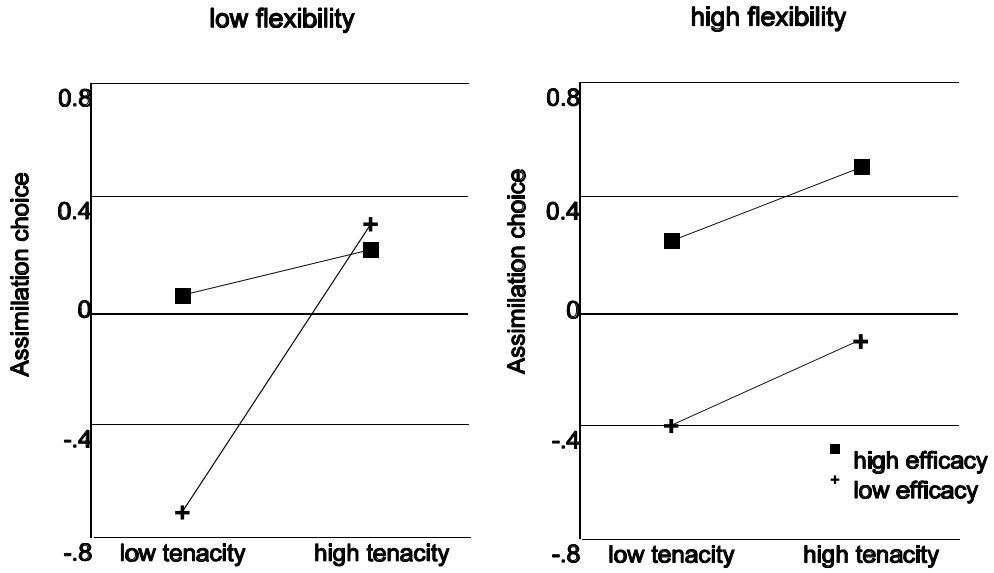


Figure 6.6: Meta-analysis, three-way interaction effect of Self-efficacy, Flexibility, and Tenacity on choice for assimilation

6.5 Discussion

The goal of the present chapter was twofold: first to replicate the findings of the previous study, in which we studied the role of self-efficacy, tenacity and flexibility on the adaptive behaviour of older people and second to investigate the role of importance of the problem in this behaviour. The ultimate aim was to gain more insight into the process of adaptation on the level of concrete coping scenarios and to better understand the role and interactions of various determinants in this process.

The major part of the findings in the previous study were replicated. The role of self-efficacy in this process is crucial: these self-referent beliefs of personal competence in view of the perceived demands of certain adaptive actions influence adaptive behaviour directly and significantly. The role of the personal dispositions - tenacity and flexibility - also became more clear. The finding that tenacity influences assimilation positively and mainly via the perception and evaluation of response efficacy was replicated in the present experiment. More tenacious persons rated assimilative adaptations as more effective than less tenacious persons and hence showed higher assimilation scores. Relatively tenacious persons appraise the complications in striving for the assimilative, problem-focused solution as a challenge rather than a threat and hence are more willing to expend effort in attaining it. The trend indicates that this effect is strongest in situations of low self-efficacy: when self-efficacy is high there is less need for tenacity to engage in the required behaviour.

The interaction between self-efficacy and flexibility that was found in the previous study was not significant in the present experiment. The hypothesized trend of highly flexible persons switching to accommodation more easily in situations of low self-efficacy was visible, however, and the results of the meta-analysis did reach significance. The opposite effect, of flexible persons engaging in assimilation more strongly in situations of high perceived efficacy was absent in the present experiment. Hence, doubts about the validity of this finding in the previous study remain. More insight could be gained by studying the 3-way interaction, as visualized in Figure 6.6. When faced with low self-efficacy regarding assimilative solutions, untenacious persons choose accommodation sooner than tenacious persons; tenacious persons invest more time and effort in attaining assimilation. However, this effect also depends on their level of flexibility: for relatively unflexible persons, this tenacity effect was much stronger, possibly resulting in premature goal-relinquishment among untenacious persons and obstinate persistence among tenacious persons. Both latter groups seem to choose sub-optimal coping strategies compared to flexible persons who are willing to invest time and energy in attaining their goals, but are also able to relinquish their striving for assimilation and choose a more accommodative option in the face of insurmountable barriers.

The hypothesized interaction effect of importance of the problem and self-efficacy on the choice for assimilation was not established. However, the effect was present for response efficacy. This finding indicates that the expectations that were formulated based on theoretical considerations may very well have been correct, but that the effect was overridden by other processes. Two suggestions could be made, based on the findings in the present study. First, the analysis of the response efficacy score of a second option, the social adaptive strategy, showed that this was also positively influenced by the importance of the problem, which may have distorted the effect. Second, the direct effect of self-efficacy on the actual choice was so strong that it could override the effect of response efficacy.

From the results of these various analyses we can conclude that both response efficacy and self-efficacy influence the choice of adaptive strategies. Importance of the problem influences the choice-process through primary and secondary appraisal and is hence accounted for in response efficacy. When more is at stake, people become more committed to solving the problem proactively. These findings not only apply to the technical, assimilative adaptation in our study, but to the more socially oriented, moderately assimilative adaptation as well. Asking others for help seems more acceptable in the case of important problems.

Personal dispositions also exert their influence on adaptive behaviour, at least partly, via perceptions of response efficacy. Relatively tenacious persons evaluate assimilative adaptation strategies more positively and perceived assimilation barriers have a smaller impact on perceived response efficacy. Tenacious persons are said to be more persistent in the face of set-backs or obstacles; they are focused on solving the problem instrumentally, and attaining their goal. This goal-directedness is reflected in a preference for the assimilative solutions that is not only visible in the choice of a certain strategy, but in the evaluation of the various options as well: tenacious persons see the assimilative options as more effective than less tenacious persons, because these strategies are goal-directed, which is in close accordance with the way they handle problems.

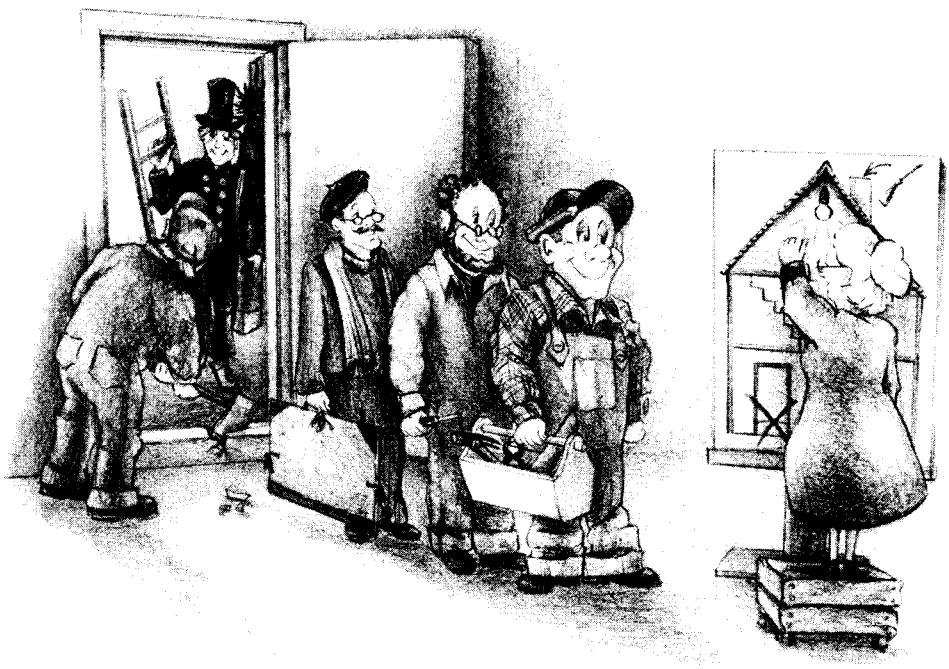
Self-efficacy not only influences the choice of an adaptive strategy indirectly via response efficacy, moderated by the importance of the problem, but directly too. Even if a certain adaptation is seen as the optimal one, with possible costs and barriers taken into account, this adaptation may not be adopted if the person perceives that the required efforts exceed his or her personal competence. In this case, a sub optimal, alternative strategy will be embraced. In the previous experiment, self-efficacy did not influence response efficacy judgments. This finding is in accordance with the present findings, since in the first study, only important problems were incorporated. Here the impact of self-efficacy on response evaluations was

shown to be modest, in contrast to less important problems, where perceptions of low self-efficacy more easily make persons relinquish their goals and accommodate.

Though we found some effects of the personal dispositions, their role, and especially the role of flexibility, was somewhat modest. We would like to mention two possible reasons for the moderate role of dispositions. First, earlier use of these concepts mainly involved studies of adaptive behaviour in hindsight and on a macro level. One could assume that the role of dispositions only becomes clear when behaviour is aggregated over numerous coping situations, but one could also conclude that the dispositions simply reflect the behaviour persons have displayed in the past. This behaviour is probably closely related to the type of problems these people have been confronted with, reflecting, for instance, their stage in the life cycle. Dispositions then present a reflection of past coping behaviour rather than a determinant of future coping strategies. However, a second plausible reason for the modest role of these dispositions is suggested by Lazarus & Folkman (1984a). They argue that the role of personal dispositions is stronger when situational characteristics are more vague or ambiguous. The problem scenarios in the present studies, however, are worked out and described in quite a detailed fashion, as are the various adaptive strategies. As the characteristics of a situation become more pronounced, their role gains significance and personal dispositions fade into the background.

Part Four

Conclusion and Discussion



CHAPTER SEVEN

THE TALE OF ADAPTATION REVISITED

In this final chapter conclusions will be drawn from the results of the empirical studies that were reported in Parts two and three. The most important results of the four studies will be discussed and related to each other and other work in this research domain, as discussed in Chapter two. Finally, implications are formulated for future research (theory and methodology) and practice (design and care/support).

7.1 Recapitulation: Goals and Background

The focus of this dissertation was on independent living for older adults, with a specific interest in their interaction with the physical environment. The aim was to gain a better understanding of how, in everyday life, older people cope with problems they are confronted with in their homes. At the beginning of the research project we formulated the following goals:

- The aim was to study the role of the older individual as an active agent in the process of independent living, as opposed to the passive or reactive role that is common in research on ageing (1.1).
- The theoretical challenge lay in the development of a model, based on theories from different domains; the goal was to derive and test a model, describing adaptive behaviour of older, independently living persons, when faced with problems in their homes that prevent them from performing certain actions (section 1.3).
- The practical challenge lay in the search for insight into why, in spite of the marked preference for ‘ageing in place’, many older persons give little time to the consideration of future housing options and refrain from seeking support services or making design alterations (section 1.3).

Before drawing conclusions from the results of the studies and discussing them, we will reconsider the backgrounds against which the present project was formulated and carried out. First, the research subject was approached from an adaptational viewpoint, which means that independent living and, more specifically, problem solving and coping were regarded as dynamic processes (section 1.1). Theories and models were drawn from the domains of environmental psychology, social psychology, and gerontology (section 1.3). The present research adheres to a transactional and ecological model of person and environment (section

1.2), recognizing the enduring qualities of interdependence between people and their environments and incorporating the various aspects of a situation. The decision was made to stay as close to real-life as possible, motivated by the observation that, especially in ageing studies, often macro-level, theoretical, and normative approaches seem to be standard (section 2.5). Finally, a non-developmental approach was chosen, studying differences within the older age group, rather than between age groups. This choice was based on the conviction that this could render important findings, shedding new light on possible reasons for some of the differences between those who are ageing successfully and those who are not (section 2.5).

After the theoretical groundwork was laid in Part one, Part two reported on two survey studies, investigating concrete adaptive behaviour of older people in their homes, in relation to personal, social, and environmental factors. The goal was to fill in the gaps in the theoretical model, identify the relative importance of certain determinants, and to identify the phases in the adaptive process in which complications occur. In the first survey, a combination of methods was used to study the problem setting, the adaptive process, and its outcome. The second survey had a longitudinal design, to study the influence of self-efficacy on intentions and actual behaviour. In Part three, two experiments were described, in which the roles of a number of important concepts - self-efficacy, personal dispositions, and goal importance - were studied more closely, using a scenario and questionnaire paradigm with hypothetical problem situations.

7.2 General conclusions

The most important findings of the four empirical studies that were reported in Parts two and three will be discussed and related to each other in the following sections, after which general conclusions will be drawn.

7.2.1 Two types of adaptation

Most theories on adaptation seem to converge to a bipartition in adaptive strategies, that broadly corresponds with the other theories (see section 2.5). We decided to mainly build on the model that was proposed by Brandtstädter and Renner (1990), distinguishing between assimilation and accommodation, based on whether the adaptation is goal-directed or involves relinquishment of goals. Real-life coping behaviour often simultaneously bears aspects of both types. This was also reflected in the results of first survey. Adaptive strategies were categorized in a more detailed fashion, not only reflecting assimilation versus accommodation, but also the object that was adapted: something in the physical environment,

in the social environment, or in the person. Especially socially directed adaptations, involving the help of others, are ambiguous since they are assimilative on the one hand, but imply giving up (part of) one's autonomy on the other, which is a highly valued goal among older persons, and make them of an accommodative nature as well. This can only be understood if one takes the total range of needs and goals of the individual into consideration. Evaluating adaptive behaviour thus requires a value-based, systemic, and ecological perspective (Baltes & Baltes, 1990).

The results of both the survey studies and the experiments demonstrate that more differentiated categorizations of adaptive strategies provide more balanced views of and better insight into the coping process. There are essential differences between strategies that cannot be fully understood via a bipartition in accommodative vs. assimilative alone. In addition, strategies only seldom are purely goal-directed or goal-relinquishing. We suggest that in future research, strategies should be evaluated more holistically, in view of the total value structure of the individual and taking the possible range of other problems into consideration, and strongly recommend the use of more detailed categorizations in future research.

7.2.2 Determinants of the choice of adaptive strategies

Four types of determinants were hypothesized to influence the choice for assimilation versus accommodation in concrete coping episodes: competence, self-efficacy, goal importance, and personal dispositions (tenacity and flexibility). Though there were clear expectations concerning the direction of the effects, questions were formulated concerning the relative importance of each of the determinants and possible interactions between them, especially since they are very different in character and stem from different bodies of research: competence could be considered as a fairly objective person variable, but from an ecological point of view, it cannot be judged without a specific context. The same holds for self-efficacy, for which conceptualizations range from trait-like to highly situation specific. In view of the ecological model we adhere to, transactional, situation-specific conceptualizations were chosen in the present research. Regardless of the level of context specificity, self-efficacy is clearly more subjective than competence. Goal importance and dispositions are both intra-personal concepts, but also very different in nature. Goals are part of the definition of the problem and directly influence primary appraisals, but they also present a possible means for adaptation: they are amenable to change, as a result of adaptation processes. Dispositions, on

the other hand, are considered relatively stable and mainly influence secondary appraisals during coping episodes. We will now discuss the general findings regarding the role of the four determinants in the following subsections.

Competence

Competence has been hypothesized to predict the range and level of adaptation (Lawton & Nahemow, 1973) or to buffer the impact of negative ageing developments (Baltes & Lang, 1997). In view of Brandtstädter and Renner's (1990) model one would expect competence to imply larger control potential and thus a stronger tendency to choose for assimilative strategies. Competence offers individuals a broader range of options to choose from, when faced with a stressful situation.

Three types of competence (coping resources) with regard to problem solving in the home environment were investigated in the first survey study: personal, social, and environmental. The general finding was that the more resources are available, the more likely the person is to choose assimilative strategies, directed at changing the physical environment. The most relevant indicators of competence were education and knowledge level on the personal side and characteristics of the house related to adaptability and adaptedness on the physical environment side. Size or type of social network were not related to adaptive behaviour in the present survey. It was concluded that the relevant competence aspects indeed provided the individual with control potential, which could be used in the process of goal attainment and maintenance and was therefore related to the choice of assimilative solutions, usually directed towards the physical environment. The role of these resources was, however, modest, which shifted the focus to a more subjective measure: self-efficacy. Competence was not included in the designs of the remaining studies.

Self-efficacy

In many theories on coping, perceived control plays an important role. In the model of Brandtstädter and Renner (1990) its role is essential: in the beginning of a coping episode, assimilative tendencies are said to dominate and accommodation only becomes an option when assimilative efforts have failed or when self-efficacy regarding these strategies is too low. Self-efficacy is therefore hypothesized to be positively related to assimilation.

Self-efficacy was not explicitly included in the design of the first survey study, but qualitative analyses of the responses and remarks that were made while discussing choices and phases in the adaptive process indicated the relevance of this concept. In the second survey, the importance of self-efficacy was firmly established in the prediction of older individuals' behaviours relevant for independent living, such as preparing meals and cleaning the house. Self-efficacy was a significant predictor of intention and actual behaviour, over and above the attitude component. This suggests that self-efficacy has significant motivational and behavioural implications for goal attainment.

In both experiments, self-efficacy had a significant main effect on the choice for assimilation in hypothetical problem scenarios. The effect in the meta-analysis was also highly significant. When the results were controlled for the response efficacy of the various adaptive options, the main effects of this factor remained present and equally strong. Self-efficacy regarding assimilative solutions did not influence response efficacy judgments of these solutions in the first experiment, in the second one there was an interaction effect with goal importance which will be discussed in the following subsection.

We conclude that self-efficacy has both motivational and behavioural implications and significantly influences the choice of adaptive strategies for older people. In situations where self-efficacy is high, people are more likely to choose assimilative solutions. Moreover, self-efficacy influences choice behaviour directly, independent of the perceived quality (or response efficacy) of the various adaptive options.

Goal Importance

In general, goal importance is mainly expected to influence the coping process through primary appraisals: the more important the goal, the more is at stake, and the more motivated the individual will be to invest time and effort to attain an optimal solution (Lazarus & Folkman, 1984b; Locke & Latham, 1990; Locke et al., 1984). This is also in line with Baltes and Baltes' (1990) model of successful ageing through selective optimization with compensation: individuals whose energy and resources are declining, will give up on or compensate for goals that are of less importance to them, but will keep on investing in the goals that are central to them. In terms of Brandtstädter and Renner's (1990) model, questions of goal importance would not become an important issue, unless assimilative attempts were hindered by a lack of actual or perceived control: initially, assimilation always is the option of preference. However, in situations of low self-efficacy, evaluations of goal importance become relevant. We therefore hypothesized an interaction between self-efficacy and goal importance. Relevant findings with regard to goal importance are found in the first survey study and even more explicitly, in the second experiment.

In the first survey study, correspondence analyses revealed patterns in the relations between problem type and adaptation type. Two dimensions delineated the domain of adaptations. One of them, the one running from structural to provisional solutions, corresponded with the range from important to less important problems. For problems related to more important goals, participants had arranged more assimilative and lasting solutions than for the less important

ones, for which they had arranged informal help, or no solution at all. The other dimension, running from help from others to managing on your own, was not related to this range in goal importance.

A similar pattern was found in the second experiment. The hypothesized interaction effect of importance of the problem and self-efficacy on the choice for assimilation was not established. However, the effect was present on the response efficacy judgments of the physical adaptations. This finding indicates that the formulated expectations based on theoretical considerations may have very well been correct, but that the effect was overridden by other processes. Two suggestions were made, based on the findings in the present study. Firstly, the direct effect of self-efficacy on the actual choice was so strong that it could override the effect of response efficacy. But secondly, and in line with the findings in Survey one, the analysis of the response efficacy judgment of the *social* adaptation showed that this was also positively influenced by the importance of the problem, which suppressed the effect of the higher response efficacy of the *physical* adaptation on the choice measurement.

Importance of the problem influences the choice process through primary appraisal and is reflected in response efficacy judgments. When more is at stake, people become more committed to solving the problem proactively and perceptions of low personal efficacy play a less crucial role. Importance therefore interacts with self-efficacy. However, these findings do not only apply to the technical, assimilative adaptation in our study, but also to the more socially oriented, moderately assimilative adaptation. Asking others for help seems more acceptable in the case of important problems, which results in higher response efficacies for these strategies as well. Thus, goal importance is not necessarily directly related to a more frequent choice of assimilation by adapting the physical environment.

Dispositions

Dispositions are relatively stable characteristics of the individual that predate a particular problem, but influence how the individual represents the problem and its solution (Willis, 1996). According to Brandtstädter, Wentura, and Greve (1993), tenacity and flexibility are dispositions that are related to the two basic coping strategies: assimilation and accommodation. These concepts were validated and tested on the level of general coping and life satisfaction, i.e. on a macro level. The two main questions for the present research were: a) can stable dispositions account for a significant amount of variance when studying adaptive behaviour on the level of concrete adaptation processes, and b) how do they interact with problem-specific perceptions of control. These questions were studied in the two experiments.

In the first experiment, tenacious persons showed higher assimilation scores than less tenacious persons. This finding was replicated in the second experiment, although there it was moderated by self-efficacy: the effect of tenacity was strongest in situations of low self-efficacy. The results of the meta-analysis again showed only a significant main effect of

Tenacity; the interaction effect with self-efficacy did not reach significance.

In both experiments, the tenacity effect was mediated by response efficacy judgments: more tenacious people judged the assimilative adaptations as more effective and hence opted for these strategies more often. The findings in the meta-analysis also significantly indicated mediation. Tenacious persons are said to be more persistent in the face of set-backs or obstacles; they are focused on solving the problem instrumentally, and on attaining their goal. This goal-directedness is reflected in a preference for the assimilative solutions that is not only manifest in the choice of a certain strategy, but already in the evaluation of the various options: tenacious persons see the assimilative options as more effective than less tenacious persons. Since tenacity did not have an effect on the self-efficacy check, we can dismiss the possibility that this effect was due to more positive perceptions of their feasibility. Rather, tenacious persons scored higher response efficacies for the assimilative solutions, because these strategies are goal-directed, which is in close accordance with the way they handle problems. Perhaps tenacious individuals define their goals in more central (as opposed to distal) or more absolute terms than less tenacious persons and hence sooner recognize the assimilative solution as the only option that really solves their problem. Though there are numerous accounts of how stable control-related characteristics possibly influence primary appraisal of a problem episode, the finding that dispositions directly influence secondary appraisals, in terms of response efficacy evaluations, was an unexpected finding that deserves attention in future research.

It was hypothesized that flexible persons would choose accommodation more often than less flexible persons, but only in situations of low self-efficacy. This trend was visible in both experiments. In addition, in the first experiment, while flexible persons were less likely to choose assimilation than inflexible persons in the low self-efficacy condition, they were more likely to choose this same option in the high self-efficacy condition. We concluded that flexible persons might be more sensitive to both barriers and possibilities in situations. However, this latter effect was absent in the second experiment and although the trend towards accommodation in the low efficacy condition was visible, the interaction between flexibility and self-efficacy was not significant in the second experiment. It did, however, reach significance in the meta-analysis, both without or with response efficacies as covariates.

The three-way interaction effect between Self-efficacy, Flexibility, and Tenacity, which emerged in the second experiment, did not reach significance in the meta-analysis. Still, Figure 6.6, which presented this effect for the combined data-set, helps us gain more insight

into the dispositions' mechanisms. When faced with low self-efficacy regarding assimilative solutions, untenacious persons choose accommodation sooner than tenacious persons; tenacious persons invest more time and effort in attaining assimilation. However, this effect also depends on their level of flexibility: for relatively unflexible persons, this tenacity effect was much stronger, possibly resulting in premature goal-relinquishment among untenacious persons and obstinate persistence among tenacious persons. Both latter groups seem to choose sub-optimal coping strategies compared to flexible persons who are willing invest time and energy in attaining their goals, but are also able to relinquish their striving for assimilation and choose a more accommodative option in the face of insurmountable barriers. Brandtstädter and Renner (1990) argue that people with both high tenacity and high flexibility will probably age most successfully, since they will choose assimilation as long as possible, but at the same time are willing to accept that some goals are unrealistic and impossible to attain and accommodate to maintain their level of well-being. In the present study, it is this group that shows the highest score on assimilation in situations of high self-efficacy and intermediate scores in situations of low self-efficacy, recognizing the possibilities and barriers in a situation, but not giving up goals too easily. On the other hand, persons in the high tenacity, low flexibility group could be in danger of becoming depressed: in the low self-efficacy condition, their intention to choose assimilation was as high as most persons in the high self-efficacy group (right '+'-sign in the left-hand diagram in Figure 6.6). Although assimilation is an important and useful strategy, there are situations in life that call for accommodation, for instance when dealing with serious illness or impairment, or the death of a loved one. If these persons are unwilling or unable to perceive and comply to this necessity, they are in danger of depression, whereas people who can accommodate in the face of unattainable goals, manage to uphold a positive self-image and experience control in doing so (Brandtstädter & Renner, 1990).

7.3 Implications

7.3.1 Research

Theory

The theoretical challenge of the present project lay in the combination of models from different domains, all relevant for the study of ageing and adaptation, and the translation of abstract and global concepts to processes on the level of concrete coping episodes. Brandtstädter and Renner's (1990) gerontological model of assimilative and accommodative coping was used as the general framework. In addition, the goal was to not conceptualize the

older person as a reactor to press, and focus only on decline, compensation and support, which was signalled as a shortcoming of most research among older people, but instead to focus on proactiveness, on encouraging and empowering the individual as an active player in the process. Bandura's (1986) self-efficacy concept, one of the important concepts in this dissertation, is very much about empowerment.

The most salient question with regard to Brandtstädter & Renner's (1990) model was as follows: can stable dispositions account for a substantial amount of variance when studying adaptive behaviour on the level of concrete coping processes? Based on the results of the two experimental studies, the answer is positive, especially regarding tenacity. This personal disposition mainly exerts its influence on adaptive behaviour via perceptions of response efficacy. Assimilative adaptation strategies are evaluated more positively and perceived barriers to reach assimilation have a smaller impact on perceived response efficacy. Flexibility interacted with self-efficacy: flexible persons would choose accommodation more often than less flexible persons, but only in situations of low self-efficacy. However, though we found some effects of the personal dispositions, their role was somewhat modest, especially that of flexibility.

Two possible reasons for this moderate role of the dispositions were given. First, earlier use of these concepts mainly involved studies of adaptive behaviour in hindsight and on a macro level. One could assume that dispositions present a reflection of past coping behaviour rather than a determinant of future coping strategies. The second reason for the modest role of these disposition is suggested by Lazarus & Folkman (1984). They argue that the role of personal dispositions is stronger when situational characteristics are more vague or ambiguous. The problem scenarios in the present studies, however, were worked out and described in quite a detailed fashion. As the characteristics of a situation become more pronounced, their role gains significance and personal dispositions fade into the background.

In view of these considerations and of the considerable intra-individual differences that were found in the first survey and the two experimental studies (reflected in the modest internal consistencies), one could argue that it is remarkable even that the dispositions did render significant results, over and above the effect of the more situation specific self-efficacy concept. We conclude that the two dispositions do have potential value in predicting adaptive behaviour in concrete coping processes, but that the interaction effect between flexibility and self-efficacy judgments needs to be studied more thoroughly. In addition, considering that these global measurements produced significant results, even more could be expected from more domain-specific measurements in terms of satisfactorily accounting for the diversity and variability of adaptation processes both between and within (ageing) individuals.

Our focus on the role of various determinants on a problem-specific level should not be

misinterpreted as a denial of the importance of global concepts or research on coping on a more aggregated level. If one is interested in understanding the role of coping on well-being and life satisfaction, these studies should certainly prove useful and offer more than studies of how people deal with separate, isolated problems. However, if we want to make actual interventions to improve or facilitate independent coping, it is an absolute necessity that we understand the actual coping process, which can only be studied on a problem-specific level. The two types of studies are clearly in line with each other and the fact that determinants have a significant role in both types only underlines their importance in the domain of coping.

Based on Baltes and Baltes' (1990) model of selective optimization with compensation, it was hypothesized that people would choose their strategies differently, depending on the importance of the goal in question. The moderating effect of the personal valence of the problem situation was also conceptualized in Brandtstädter and Renner's (1990; Brandtstädter & Greve, 1994) model: assimilative efforts should be relinquished less easily for more important events. Although these effects were reflected in response efficacy judgments of the assimilative solutions, the effect on the choice variable was absent. Simultaneously, judgments of the socially directed options, involving the use of external help became more positive, implying easier acceptance of these options. These persons were willing to trade part of their autonomy in the service of goal attainment, which could be seen as a reflection of selective optimization (attainment of relevant goal) with compensation (external control for personal control), thus implicitly supporting both models. The findings, however, do stress the importance of more differentiated coping categorizations than the dichotomies that are common in many theories of adaptation, not reflecting the complexity of realistic problem situations and individual goal systems.

There is some degree of controversy between Baltes and Baltes' theory and the model presented by Brandtstädter and Renner: this latter model states that accommodation is used only when 'assimilative tendencies [...] are eroded by repeated unsuccessful attempts to alter the situation' (Brandtstädter & Greve, 1994), while the former suggests that accommodation is sometimes chosen proactively in the interest of freeing energy for highly important assimilative tasks. In the present research, we have found some indications that older people sometimes choose more accommodative strategies without actually trying to engage in assimilation both in the experiments, where participants responded to hypothetical problems and in the first survey, where they discussed real life coping episodes. However, since the effects of goal importance were somewhat ambiguous it yet remains unclear whether this is a conscious selective process, or an unselective, general response to situations of low self-efficacy. This should be studied more thoroughly, preferably in situations where persons are

confronted with more than one problem at a time, to render more possibilities of finding differential responses for less or more important goals.

The utility of Bandura's (1986) self-efficacy in the domain of ageing and adaptation is firmly established in the present research. Self-efficacy influences choice behaviour directly, independent of the perceived quality (or response efficacy) of the various adaptive options. This explains why some (older) people reject assimilative, proactive adaptations of the physical environment, even when they are aware of them and recognize their benefits. Although only older people participated in the present study, there is a large body of studies showing the relevance of self-efficacy in coping among younger persons (Bandura, 1986). In addition, a recent study by Blanchard-Fields, Chen, and Norris (1997) rendered perceived ability to solve the problem as a significant predictor of coping strategies in the instrumental domain and interpersonal domain for five age groups, ranging from adolescents to older adults.

On the whole, Brandtstädter and Renner's model of assimilative and accommodative phases of coping as was presented in 1990, was supported and the various parameters that were incorporated all seem relevant indicators of coping behaviour in actual, concrete episodes of coping, where until now the model had only been tested on the level of generalized behavioural tendencies. The research is relevant since these general studies showed that these behaviours were related to indicators of depression, well-being, and life satisfaction in old age.

In the present research we conceptualized control, or more specifically, self-efficacy, as an input variable in the coping process. It is however, also often mentioned as an output variable, resulting from successful adaptive strategies, either assimilative or accommodative (Brandtstädter & Greve, 1994; Brandtstädter & Rothermund, 1994; Brandtstädter et al., in press; Brandtstädter et al., 1993). These findings do not refer to perceived control, but rather to experienced control, which is very important, since it is always beneficial (Skinner, 1996). The experience of control, however, was not considered explicitly in the present research.

Though the survey was focused on real-life situations and actual behaviour, the paradigm of the experiments was based on hypothetical problems. It would be interesting to follow up on the research in studies with a focus on actual behaviour, preferably in a longitudinal design. This would be most interesting since it would reveal the continuing effect of self-efficacy and mastery experiences in contrast to the downward spiral of self-efficacy and competency that is mentioned in relation to ageing, resulting in declining cognitive and behavioural functioning (Bandura, 1986). People who are insecure about their efficacy are said to curtail the range of their activities and undermine their efforts in those they do undertake, which results in a progressive loss of skill. Similarly, a stable or even upward trend could be hypothesized for people with positive efficacy experiences and realistic efficacy perceptions. This, in our opinion, would be a promising line for future research.

Past experience in general was not central to the present research. It is, however, one of the major precursors of self-efficacy and task-relevant knowledge (Bandura, 1986). In addition, experience has been found to be a positive indicator of competence and to buffer age-related differences in performance, for instance in domains of everyday problem solving and the use of interactive devices (Denney, 1989; Denney & Pearce, 1989; Freudenthal, 1998).

The focus in this project has mainly been on the enhancement of assimilation. It should be stressed here that we certainly recognize the importance of accommodative coping strategies (and hence, flexibility) in maintaining a positive self-image and feelings of general competency (Brandtstädter et al., in press). The point we are making here is not that assimilation is always the best option in a coping episode. It is however, the choice of preference in situations where central goals of the individual are in question. In addition, as was stated in the introduction, we chose to mainly work with problem types for which assimilative solutions were within realistic reach for most (older) individuals and for which the physical environment held important potential in providing opportunities for solutions or improvement. A certain level of self-efficacy is necessary to recognize and utilize this potential and coping proactively with some of the challenges one encounters in life. This striving is in line with a number of other recent studies, where older individuals are seen as more active agents seeking challenges, purposefully steering their lives, and transcending limits using available resources (Ruth & Coleman, 1996; Ryff & Essex, 1992). A proactive attitude gives the person a sense of control, which in itself is a significant determinant of well-being, while a repeated relinquishment of control may result in a state of passivity and helplessness (Brandtstädter & Renner, 1990; Fry, 1989; Skinner, 1996).

Methodology

The aim of the present research project was to study the role of the older individual as an active agent in the process of independent living, more explicitly, in the process of adaptation when faced with problems related to independent living. To achieve this, the adaptive behaviour of older persons in their own homes was first studied explicitly and in real-life. Attention was paid to the context in which this behaviour occurred, both regarding the physical and the social environment, the various steps in the process, the role of the individual, the options that were formulated and the choices that were subsequently made, and the outcome of these processes. Various methodologies were used to gather relevant data: interviews, questionnaires and walk-throughs with a checklist.

Sources report that for a variety of reasons (education, experience, health problems, fatigue, sensory impairment), older people usually have more difficulty than younger people performing many cognitive tasks, like for instance survey responding (Jobe, Keller, & Smith, 1996; Lawton, 1987). The experiences in the survey indicated that to have people react to concrete problems and options was a very powerful technique, evoking rich responses and high involvement of the research participants. In addition, a small, exporatory study was performed that is not reported in the preceding chapters (de Kort, van Wagenberg, & Midden, 1995). In this study, sixteen older participants were presented with two hypothetical problems and asked to think of possible solutions (ten individually and the others in couples). Subsequently, they were asked to evaluate these solutions and choose the one they would apply themselves. The think-aloud protocols that were taped during the session, were content-analysed and provided a very differentiated picture of the design, choice, and evaluation process, which was valuable in developing later research materials. It also showed that working with these concrete, but hypothetical problems was equally motivating as incorporating people's own problems in the research.

Subsequently, an experimental paradigm was developed to further explore the choice process and its determinants in a more structured fashion. Extreme care was paid to the formulation of the problem scenarios. In general, it is difficult for persons to answer questions about an environment or situation that they have never experienced, but this may be even more critical among older persons, who already are cautious when participating in research (Lawton, 1987). The formulation of the closed questions and answering categories also was critical. A common experience that we encountered was that older persons tended to respond with narrative answers and were resistant to providing category answers of the required type (Jobe, Keller, & Smith, 1996). The use of a two-stage questioning technique, and some assistance in translating the respondent's answer proved a useful way to deal with these complications.

A positive attribute of the experimental paradigm was that it addresses the respondents as experts by experience rather than subjects in a test situation, thus alleviating the test anxiety that is sometimes found among older people who are unfamiliar with the concept of social research. The fact that only few respondents mentioned additional solutions in response to the scenarios indicates that the three strategies for every problem in general represented a realistic range of options. The level of concreteness and specificity of the items further simplified the task and had a motivating effect on the respondents. Adding these experiences to the results of the validity and reliability tests of the scenario and choice methodology (see section 5.2.3), we conclude that a useful and attractive paradigm was developed to study the determinants of the choice process in concrete coping episodes.

The methodology that was developed would not be suitable in the present format for use among young respondents, because the problem situations would not be very meaningful or recognizable to them. This would likely decrease the reliability and external validity of the method. New problem scenarios, appealing to people from different age groups would therefore have to be developed to use the paradigm in younger cohorts. This, however, was not a crucial issue within the framework of the present dissertation. At the start of this project it was explicitly stated that we would not choose a developmental viewpoint or focus on differences between age groups. We believe that studies as this one, focusing on differences within the older age group also renders important findings, shedding light on possible reasons for the differences between those who are ageing successfully and those who are not, showing how relevant variables (e.g. self-efficacy beliefs, dispositions, and goals) besides age can influence functioning. Findings highlighting which determinants contribute to successful adaptation can also provide theoretical insight and directions for policy and practice.

7.3.2 Practice

The practical challenge lay in the search for insight into why, in spite of the marked preference for 'ageing in place', many older persons seem hesitant to consider future housing options or making design alterations in their own homes. The first survey showed that, when confronted with a problem in their home, most people do think about possible solutions and often discuss these with others. In the study that was briefly described in the previous section, participants also mentioned several options for each problem, including physical adaptations, which indicates that conceptualizing (assimilative) solutions is not the bottleneck in the problem-solving process (de Kort et al., 1995). In fact, some came up with very creative and insightful solutions. In this same study, considerations of ease vs. difficulty of implementation, realization, and use were among the most frequently mentioned in the process of evaluating and choosing the best option. Findings of the surveys and experiments subsequently indicated that perceptions of personal efficacy regarding this type of adaptive strategies significantly influence adaptive behaviour and the choice process. Thus, this relationship was not only established in correlational studies, but after experimental manipulation as well.

The findings of this study underline the importance of perceptions of control and competence among older people. In real life, older persons are often confronted with problems for which assimilative solutions are difficult to realize. Often they are faced with complex procedures and scarce or ambiguous information. In these situations, perceived self-efficacy is bound to be low, especially for persons with decreasing resources and networks. If one's goal is to support older people to live independently and to deal with problems that occur in their

home, designing sophisticated aids and adaptations is not enough. Designers and care professionals have to be sensitive to the complications older people face or believe they will face in planning and implementing their products or adaptations.

It is important to realize that competence and self-efficacy should not be regarded as personal characteristics, but as transactional characteristics, based on the interplay and interdependence between person and environment. Hence, instruments aimed at raising self-efficacy could be sought both in the environment and in the person. Possibilities for enhancing self-efficacy in the environment could be found in decreasing the complexity of procedures and products, and enhancing the availability and coordination of information. It should thus be visible in the design or product itself, in the process of implementing, building or learning to use it, and in an active, supporting, advising and educating role in the first phases of problem episodes.

On the personal side, efficacy enhancement could be attained by sharing vicarious experiences within groups of older persons, social persuasion, or in specific education or training programs in everyday problem-solving processes (Bandura, 1986). In the domain of health education self-efficacy has already been shown to be an important determinant of behaviour and behaviour change (Kok et al., 1992). The findings of the experiments show that especially older persons with relatively low levels of tenacity are in danger of relinquishing goals prematurely. Tenacious persons were more willing to invest time and effort to overcome perceived barriers or complications. We therefore conclude that although improvements in the design and distribution of technical aids and adaptations would be highly beneficial for both groups, extra attention should be paid to persons in the low tenacity group. Tenacity could hence be used as a screening parameter for referring people to self-efficacy enhancing programs.

The starting point for most adaptation processes is a mis-match between the wishes and needs of the individual and the characteristics of the environment. In this dissertation we have focused mainly on problems that arose due to changing capacities of the older person. However, wishes and goals of individuals can also change, irrespective of physical decline. After all, we are more than mere responders to environmental press. Such a change in goals can cause incongruence and be an impulse to adaptation processes. Moreover, people change with time, but so does our environment. A mere glance in any household appliances store, office park, or even your local grocer will illustrate this. When the person and the environment change at different speeds, or even in different directions, incongruence occurs (‘individual and structural lag’, Lawton, 1998). The findings in this dissertation equally apply to adaptation processes that result from the various types of incongruence.

It has been stated that in view of the trends toward societal ageing, the design of supporting environments and technology for an ageing population has become an increasingly important direction for research and policy (Bouma, 1992; Graafmans, Taipale, & Charness, 1998;

Stokols, 1995; Verbrugge & Jette, 1994). Considering the findings and discussion that have been reported in the present dissertation, we would like to stress that this should be a process of designing *with* as much as *for* older persons, of empowering them by making them aware of the fact that the physical environment is not only part of the problem, but part of the solution as well (Byerts, 1979), and by showing them how to use this potential proactively. As Kok, de Vries, Mudde and Strecher (1991) have stated: "Convincing people about the utility of the expected behaviour is necessary but not sufficient. It is also necessary to teach people the skills that are needed to change their behaviour and to maintain the behaviour change by improving self-efficacy" (pp. 237). We would therefore like to call for the development of programs that aim to enhance problem solving and goal-directed adaptations of the physical environment among independently living older persons. Though the scope of the present research is too narrow to describe all the requirements and necessary steps in detail, some suggestions are formulated below as illustrative examples of what could be done.

Since a powerful way of showing older people the potential of the physical environment and ways to use it, is by working *with* them instead of *for* them, we would recommend that advisors visit these persons, preferably in their homes, and analyse and discuss the problems cooperatively, showing them the process of design and problem solving, in stead of presenting them with a solution based on their expert opinion. In addition, there is a distinct preference for advisors that are "old" themselves. This method encompasses positive features of all of the four techniques Bandura (1986) formulates for raising self-efficacy: personal experience of performance, vicarious others as examples, social persuasion and, since this is done in a private, well-known and relaxing atmosphere, a relatively low level of physiological arousal.

A strategy that cuts both ways is the enhancement of consumer participation in the development and design of new products: designers and developers become more aware of the consumers' perceptions of disadvantages and complications in the use of their designs and in the process of implementing those designs, while at the same time the consumers grow more familiar with the process of design and more efficacious in defining their problems and in formulating their goals and demands. Nothing boosts self-efficacy as much as the actual experience of control and successfully performing an activity (Bandura, 1986). Participatory design projects have been shown to make participants more aware of the importance of their environment, to convince them that improvements can be made and have a lasting effect, in the sense that participants continued to make design changes after the initial project (van Wagenberg, 1982).

When individuals feel that they are in control of the problem-solving process, they are more involved, which should result in more suitable solutions. Moreover, the very act of exercising proactivity contributes to the self-respect of people, even those who are already severely impaired (Bandura, 1986; Lawton, 1990). It helps maintain a feeling of competence and self-efficacy and prevents people from entering a downward spiral of inefficacy or even

learned helplessness. These thoughts provide an important reason for trying to stimulate proactivity and assimilation in adaptive problem solving among older people. Self-efficacy and proactivity are indispensable for living happily ever after...

SUMMARY

This dissertation addresses how older persons cope with problems that confront them in their homes and seeks to identify important psychological and situational determinants of this process. The aim of this work is to study the role of the older individual as an active agent in the process of independent living. The subject is approached from an adaptational viewpoint, and based on models and theories on adaptation from the domains of environmental psychology, social psychology, and gerontology.

In Chapters one and two the subject is introduced and relevant literature is discussed. Comparing models from the different domains we conclude that in general, similarities are more striking than dissimilarities. However, the roles of different types of determinants are often studied separately and only on a macro level. The result of this exercise was a model of adaptive behaviour, based on Brandtstädter and Renner's (1990) theory of coping. They posit two complementary coping mechanisms to maintain life satisfaction: accommodation, involving accommodation of goals to losses and obstacles, and assimilation, involving active modification of the environment in the service of ongoing goal attainment. Although both mechanisms are said to result in satisfaction and well-being, assimilative strategies usually have the highest preference at the beginning of an adaptation process. The assimilation - accommodation dichotomy is very similar to Lazarus and Folkman's (1984b) categorisation of problem-focused versus emotion-focused coping and Lawton's categorization of proactivity versus docility.

The proposed model consists of several different types of determinants of coping (or adaptation): competence, self-efficacy, personal dispositions, and goals. *Competence* is conceptualized as a transactional characteristic, describing personal, social, and environmental attributes and resources, giving the individual the capacity to interact effectively with the environment. *Self-efficacy* is conceptualized as people's judgements of their capabilities to organize and execute specific courses of action required to attain designated performances (Bandura, 1986). It is also transactional. Both competence and self-efficacy are hypothesized to be positively related to assimilative adaptation strategies. *Personal dispositions* are relatively stable personal characteristics. We discern two types related to the two respective types of adaptation assimilation and accommodation: tenacity - reflecting the persistence with which people cling to their goals, even in the face of obstacles or high chances of failure - and flexibility - referring to the capability or readiness to disengage from blocked developmental options and to flexibly readjust one's developmental goals. Finally, *goals* are hypothesized to influence the adaptation process: they give direction to behaviour and influence a person's

commitment. Goal importance is thus hypothesized to be positively related to assimilation. This model is explored and tested in Parts two and three of the dissertation. A list of definitions of the most relevant concepts is given in Table 2.2 on page 34.

Part two covers two survey studies that investigate concrete adaptive behaviour of older people in their homes in detail, to fill in the gaps in the theoretical model, identify the relative importance of certain determinants, and to identify the phases in the adaptive process in which complications occur. In Survey one (Chapter three) 112 older households (63 - 93 years old) participated. A combination of methods, i.e. an interview, questionnaire and walk-through checklist, was used to study problems that had actually occurred in their homes, the roles of various coping resources (as indicators of competence), the adaptive process, and its outcome, in terms of assimilation versus accommodation and the object that was adapted (the physical environment, social environment or the self). Findings demonstrated that the adaptive strategy persons choose depends on the type of activity that is hindered. This was explained partly in terms of the availability of ready-made solutions and partly in terms of the importance of the goals that were blocked. In addition, a number of coping resources had a moderate effect on the choice of adaptation strategies. The most important ones were education level and knowledge, living situation, and adaptability and adaptedness of the home. More qualitative analyses subsequently indicated that most difficulties in the adaptation process occur in the planning and implementation phase and that these often seemed to involve low perceptions of self-efficacy.

In Survey two we empirically investigated the importance of self-efficacy in independent living in general. Eighty-one older persons participated in this two-wave study, by filling out two questionnaires, the second one two weeks after the first one. The first questionnaire measured participants' attitude, self-efficacy and intention regarding three behaviours relevant for independent living. In the second questionnaire participants reported the frequency of engaging in those three behaviours in the two preceding weeks. For all three behaviours a very similar picture emerged: both attitude and self-efficacy emerged as significant predictors of intention. The effect of self-efficacy was always stronger than that of attitude. Intention subsequently predicted actual behaviour in the following two weeks, besides a significant gender effect. It was concluded that self-efficacy was a highly relevant concept in the domain of independent living.

In Part three, two experiments are described that test the (interacting) effects of self-efficacy, personal dispositions, and goal importance on the choice of assimilative adaptation strategies. A scenario and questionnaire method was developed and tested that describes concrete, hypothetical problem situations and a set of adaptive options for each,

ranging from assimilative to accommodative. Eighty-six persons, 65 to 85 years old, participated in Experiment one (Chapter five). Self-efficacy regarding the assimilative option (involving an adjustment of the physical environment) was manipulated and the personal dispositions, tenacity and flexibility were measured. Self-efficacy and Tenacity both had significant main effects on the choice of assimilation: in conditions of high perceived self-efficacy, participants chose the assimilative strategy more frequently than in conditions of low self-efficacy. Relatively tenacious persons also chose this strategy more frequently, instead of the more accommodative alternatives. Besides these main effects, an interaction effect occurred between Self-efficacy and Flexibility: inflexible persons hardly responded to the manipulation of self-efficacy, whereas flexible persons did show a clear effect of self-efficacy on their choice of assimilation.

The goal of the second experiment was to replicate the findings of the first one and to study the additional effect of goal importance. Again, personal dispositions were measured and self-efficacy regarding the assimilative option was manipulated. Moreover, the problem scenarios were rewritten with two versions each: one in which the consequences were very serious and one in which they were only moderately serious. The major part of the findings in the first experiment were replicated: again Tenacity and Self-efficacy had a positive effect on the choice of assimilative strategies. The interaction between Self-efficacy and Flexibility was not significant, but there was a three-way interaction between Self-efficacy, Tenacity, and Flexibility. Although it was expected, no significant (interaction) effect of importance on the choice of assimilation was found. However, follow-up analyses of the evaluation scores of all the adaptive options shed more light on this finding. Most importantly, the importance manipulation not only influenced the evaluation of the assimilative option, but also of accommodative options involving the acceptance of help from others. These latter options seemed more acceptable for more important problems. This explains why more important problems did not directly result in the choice of purely assimilative options.

In the final part of this dissertation, general conclusions are drawn and theoretical, methodological, and practical implications are discussed. On the whole, Brandtstädter and Renner's model as presented in 1990 is supported and the variables they mention seem relevant indicators of coping behaviour in actual episodes of coping, where until now the model was only tested on the level of generalized behavioural tendencies. The findings, however, do stress the importance of more differentiated coping categorizations than the dichotomies that are common in many theories, reflecting the complexity of both realistic problem situations and individual goal systems. The roles of personal dispositions,

competence, and goal importance in concrete adaptation processes also are more clear. Finally, Bandura's (1986) self-efficacy concept proved highly relevant in the domain of independent living for older persons. This concept provides several possibilities for the enhancement of independent living. These are discussed in the practical implications section.

SAMENVATTING

In deze dissertatie is onderzocht hoe ouderen omgaan met problemen waarmee zij in hun woning geconfronteerd worden en welke belangrijke psychologische en situationele determinanten dit proces beïnvloeden. Het doel van dit project was de oudere te bestuderen, niet slechts als reactor, maar vooral als actor in het proces van zelfstandig wonen. Het onderwerp is benaderd vanuit een aanpassingsperspectief, gestoeld op modellen en theorieën over aanpassing vanuit de wetenschapsdomeinen omgevingspsychologie, sociale psychologie en gerontologie.

In deel 1, bestaande uit hoofdstuk 1 en 2, wordt het onderwerp van deze dissertatie geïntroduceerd en relevante literatuur besproken. Bij het vergelijken van de modellen uit de verschillende domeinen concluderen wij dat in het algemeen meer overeenkomsten dan verschillen tussen deze modellen bestaan. De rol van de verschillende typen determinanten die worden aangedragen wordt echter slechts zelden simultaan onderzocht en vaak op een hoog abstractieniveau. Deze bespreking resulteert in een model van aanpassingsgedrag dat gebaseerd is op de theorie van Brandtstädter en Renner (1990). Zij beschrijven twee complementaire 'coping' ofwel aanpassings-mechanismen om algemeen welbevinden op peil te houden bij veranderende omstandigheden. Dit zijn accommodatie, ofwel het neerwaarts bijstellen van doelen bij verlies of moeilijkheden, en assimilatie, het actief aanpassen van de omgeving om zo alsnog het gewenste doel te bereiken. Hoewel beide strategieën uiteindelijk resulteren in tevredenheid, zal men in het begin van een aanpassingsproces assimilatieve strategieën prefereren boven accommodatieve strategieën. De tweedeling assimilatie - accommodatie is vergelijkbaar met de door Lazarus en Folkman (1984b) voorgestelde categorisatie van probleemgerichte versus emotiegerichte aanpassingsstrategieën en met Lawton's categorisatie van proactiviteit versus dociliteit.

Het voorgestelde model bevat verschillende typen determinanten van aanpassingsgedrag: competentie, eigen effectiviteit, persoonlijke disposities en doelen. *Competentie* (competence) wordt gedefinieerd als het geheel van persoonlijke, sociale en omgevingsattributen dat de persoon de capaciteit geeft effectief met de omgeving te interacteren. *Eigen effectiviteit* (self-efficacy) wordt gedefinieerd als de inschatting door het individu van de eigen capaciteiten om bepaalde specifieke handelingsstrategieën te organiseren en uit te voeren (Bandura, 1986). Deze beide begrippen zijn dus niet alleen afhankelijk van de persoon, maar ook van de situatie

waarin deze zich bevindt en de wederzijdse afstemming daartussen. We noemen deze grootheden daarom transactioneel. De verwachting is dat zowel competentie als eigen effectiviteit positief gecorreleerd zijn met assimilatieve aanpassingsstrategieën. *Persoonlijke disposities* zijn relatief stabiele eigenschappen van de persoon. We onderscheiden in dit onderzoek twee relevante disposities die gerelateerd zijn aan de twee typen aanpassingsstrategieën (assimilatie resp. accommodatie). Enerzijds vasthoudendheid (tenacity), wat verwijst naar de volharding waarmee mensen hun doelen blijven nastreven, zelfs bij barrières of lage slagingskansen, en anderzijds flexibiliteit (flexibility), wat verwijst naar de capaciteit of bereidheid van mensen om geblokkeerde doelen op te geven of bij te stellen. *Doelen* tenslotte worden geacht richting te geven aan het aanpassingsproces en de betrokkenheid en inzet van personen te beïnvloeden. We verwachten om die reden dat doelimportantie positief gerelateerd is aan assimilatie. Dit model wordt geëxploreerd en getoetst in deel 2 en 3 van de dissertatie. In tabel 2.2 op pagina 34 wordt een overzicht gegeven van definities van de meest relevante concepten.

In deel 2 worden twee survey-studies beschreven om het concrete aanpassingsgedrag van ouderen in hun woning in detail te bestuderen, onduidelijkheden in het model uit te diepen, het relatieve belang van de verschillende determinanten te bepalen en de fasen in het proces te vinden waarin zich de meeste complicaties voordoen. In de eerste survey (hoofdstuk 3), waarin 112 ouderen (63 - 93 jaar) participeerden, werd gebruik gemaakt van gemengde onderzoektechnieken: interview, vragenlijst en een woning-checklist. Zo werden de problemen die waren opgetreden in de woning, de rol van verschillende aanpassingshulpbronnen (indicatoren van competentie), het aanpassingsproces zelf en het resultaat ervan, bestudeert in termen van assimilatie versus accommodatie en het object van aanpassing (de fysieke omgeving, sociale omgeving, of de persoon zelf). De resultaten laten zien dat de keuze van een bepaalde aanpassingsstrategie o.a. afhangt van de activiteit die gehinderd wordt. Dit kan deels verklaard worden door de beschikbaarheid van kant-en-klare oplossingen en deels in termen van het belang van de doelen die werden geblokkeerd. Daarnaast blijken ook enkele indicatoren van competentie een klein effect te hebben op de keuze van een strategie. De belangrijkste zijn opleidings- en kennisniveau, woonsituatie en aanpasbaarheid van de woning. Voorts geven kwalitatieve analyses aan dat de meeste problemen in het aanpassingsproces optreden in de plannings- en implementatiefase en dat deze veelal te maken hebben met lage inschattingen van eigen effectiviteit.

In de tweede survey (hoofdstuk 4) bestudeerden we het belang van eigen effectiviteit in het algemene domein van zelfstandig wonen. Aan deze survey namen 88 ouderen deel, door twee vragenlijsten in te vullen die twee weken na elkaar werden uitgezet. Met de eerste lijst werden attitude, ingeschatte eigen effectiviteit en intentie gemeten met betrekking tot drie typen gedragingen die relevant zijn voor zelfstandig wonen. In de tweede lijst werd vervolgens de frequentie van het uitgevoerde gedrag in de voorafgaande twee weken gemeten. Voor alle drie

de gedragingen verscheen hetzelfde plaatje: zowel attitude als eigen effectiviteit zijn significante voorspellers van de intentie om het gedrag uit te voeren (het effect van eigen effectiviteit was steeds het sterkst). Intentie bleek op haar beurt, naast een man/vrouw effect, de frequentie van het gedrag in de volgende twee weken significant te voorspellen. We concluderen daarom dat eigen effectiviteit een zeer relevant concept is in het domein van zelfstandig wonen.

In deel 3 worden twee experimenten beschreven waarmee de (interacterende) effecten van eigen effectiviteit, persoonlijke disposities en doelimportantie op de keuze van assimilatieve aanpassingsstrategieën worden getoetst. Hiervoor werd eerst een onderzoeksinstrument ontwikkeld en getest dat bestond uit concrete scenario's van hypothetische problemen met ieder een set oplossingen en bijbehorende vragenlijsten. De oplossingen varieerden steeds van assimilatief tot accommodatief. Aan experiment 1 namen 86 personen deel van 65 tot 85 jaar. Eigen effectiviteit met betrekking tot de assimilatieve oplossing werd gemanipuleerd en de persoonlijke disposities werden gemeten. Zowel eigen effectiviteit als vasthoudendheid hadden een significant effect op de keuze van assimilatie: in condities van hoge ingeschatte eigen effectiviteit kozen de participanten vaker voor de assimilatieve oplossing. Ook relatief vasthoudende mensen kozen deze strategie vaker. Naast deze hoofdeffecten trad er een interactie-effect op tussen eigen effectiviteit en flexibiliteit: inflexibele participanten waren vrijwel ongevoelig voor de manipulatie van eigen effectiviteit, terwijl flexibele personen wel een duidelijk effect van eigen effectiviteit vertoonden op de keuze van assimilatie.

Het doel van het tweede experiment was enerzijds de bevindingen van het eerste experiment te repliceren, anderzijds het additionele effect van doelimportantie te bestuderen. Opnieuw werden de disposities gemeten en eigen effectiviteit gemanipuleerd. Bovendien werden de scenario's zodanig herschreven dat er twee versies van ieder probleem waren, één met hoge importantie en één met lage importantie. De bevindingen van het eerste experiment werden grotendeels gerepliceerd: vasthoudendheid en eigen effectiviteit bleken opnieuw een positief effect te hebben op de keuze van assimilatieve aanpassingsstrategieën. Hoewel de interactie tussen eigen effectiviteit en flexibiliteit niet significant was, vonden we wel een 3-weg interactie van deze twee factoren en vasthoudendheid. Opvallend was dat er geen (interactie-) effect optrad van doelimportantie. Dit kon verklaard worden m.b.v. de vervolganalyse die liet zien hoe de evaluaties van alle oplossingen werden beïnvloed door de manipulatie van doelimportantie. Het belangrijkste was dat deze niet alleen de evaluatie van de assimilatieve strategie versterkte, maar ook die van de accommodatieve strategie, die betrekking had op het aanvaarden van hulp van anderen. Voor belangrijke problemen leek deze laatste strategie makkelijker te accepteren. Dit verklaart waarom belangrijke problemen niet rechtstreeks de keuze van een zuiver assimilatieve oplossing tot gevolg hadden.

In het laatste deel van deze dissertatie worden algemene conclusies getrokken en theoretische, methodologische en praktische implicaties besproken. In het algemeen kunnen

we zeggen dat het model van Brandtstädter en Renner, zoals dat in 1990 gepresenteerd werd, ondersteund wordt door onze bevindingen en dat de variabelen die door hen genoemd werden relevante indicatoren blijken van aanpassingsgedrag op het niveau van concrete probleemscenario's, waar deze voorheen slechts getoetst waren op het niveau van gegeneraliseerde gedragstendenties. De bevindingen wijzen echter wel op het belang van meer gedifferentieerde 'coping'-categorisaties dan de gebruikelijke dichotomieën, die geen recht doen aan de complexiteit van realistische probleemsituaties en individuele doel-hiërarchieën. Er is meer duidelijkheid gekomen over de rol van persoonlijke disposities, competentie en doelimportantie. Tenslotte bleek Bandura's (1986) eigen effectiviteitsconcept zeer relevant in het domein van zelfstandig wonen voor ouderen. Deze theorie draagt bovendien mogelijkheden aan om ouderen die zelfstandig willen blijven wonen te ondersteunen. Deze mogelijkheden worden besproken in de sectie over praktische implicaties.

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APPENDICES

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APPENDIX A
SURVEY ONE - DESCRIPTIVE STATISTICS

Table A.1
Bivariate correlations between indicators of coping resources

	1	2	3	4	5	6	7	8	9	10
1 alone	X									
2 age	.33*	X								
3 gender	.10	-.13	X							
4 health	.03	.12	-.12	X						
5 education l.	.08	-.14	-.14	.23*	X					
6 knowledge	-.40*	-.25*	-.03	.06	.30*	X				
7 financial sit.	-.21*	.06	-.05	.41*	.38*	.10	X			
8 network type	-.24*	.02	.14	.07	.06	.21*	.19	X		
9 network size	.10	.04	.05	-.19*	-.16	-.13	-.31*	.04	X	
10 adaptability	-.23*	-.14	.09	.12	.24*	.22*	.38*	.09	-.15	X
11 adaptedness	-.22*	-.18	.21*	-.15	.04	.14	.02	.00	.07	.40*

Note. 'alone' and 'gender' are dichotomous variables, high scores represent living alone vs. with partner and female vs. male. *$p < .05$

Table A.2
Zero order correlations between adaptive strategies and coping resources

	physical adaptation	formal help	informal help	change of behaviour	accommodative adaptation
1 alone	-.01	.16	.23 *	-.35 ***	.03
2 age	-.14	.11	.27 **	-.24 *	.10
3 gender	-.13	.13	-.01	.05	.01
4 health	-.03	-.12	.10	.02	.07
5 education l.	.26 **	-.20 *	-.01	-.01	-.15
6 knowledge	.20 *	-.20 *	-.17	.09	-.09
7 financial sit.	.05	-.18	.13	.19	-.09
8 network type	-.04	-.15	.11	.05	.05
9 network size	.04	-.01	.07	-.07	-.03
10 adaptability	.12	-.11	-.02	.20 *	-.23 *
11 adaptedness	.04	-.07	.01	.17	-.13

Note. 'alone' and 'gender' are dichotomous variables, high scores represent living alone vs. with partner and female vs. male. *$p < .05$, **$p \leq .01$, ***$p \leq .001$.

APPENDIX B
PROBLEM SCENARIOS & SELF-EFFICACY MANIPULATION

Six problem scenarios were designed for the first experiment and for every scenario three options were formulated: one assimilative, directed at altering the physical environment (*Env*), and two more accommodative, one involving the acceptance of help from others (*Soc*) and one purely personal (*Per*).

Below you will find the translated versions of the six scenarios, including the adaptive options. In addition, examples of the self-efficacy manipulation are given for the first three scenarios.

Scenario One

A 72 year-old woman, who makes dolls as a hobby has a hobby room with cabinets full of materials. However, she can no longer reach the materials that lie at the bottom of these cabinets, because she can't kneel down or bend very well. She wonders what to do now.

Per She could leave as many of the materials, which are now at the bottom of the cabinets, lying on the table. Naturally, the table would be rather full, but on the other hand she wouldn't have to bend over that often.

Soc She could ask the people who visit her to help her get the materials she needed and to put away the materials she wouldn't be using in the near future.

Env If she had drawers in the cabinets, she wouldn't have to reach that far anymore and could easily use everything. This solution has the added advantage of being more orderly. But she's not sure whether this would be possible. ...

Example of self-efficacy manipulation:

low It is quite difficult to fix smoothly running drawers in her existing cabinets and she doesn't know any people who are that skilful. It is probably hard to find a company or person who would do this for her.

high But it wouldn't be too complex to fix smoothly running drawers in her existing cabinets. She doesn't know any people who are that skilful, but she could probably easily find a person in the yellow pages who would do this for her.

Scenario Two

A single 74 years-old man finds himself in the following situation: though in general he considers himself healthy and competent, he has become less strong and supple. His house has a bathroom with a bath-tub and a washing-stand, but no separate shower. He prefers taking a bath or shower over washing in front of the washing-stand, because he feels fresher afterwards. Lately he has been experiencing considerable trouble climbing in and out of the tub. How could he cope with this problem?

Per He could decide to wash himself in front of the washing-stand in future, so that he doesn't have to use the bath-tub any longer but can still wash himself independently.

Soc He could apply for professional care assistance at home to help him bathe every day.

Env He could also have the bathroom altered: remove the tub and install a shower. A shower would be more convenient, since he could use it standing or seated, without climbing. But this would require a structural renovation...

Example of self-efficacy manipulation:

low , which is something that many would dread. He would have to make a design and decide which arrangement would suit him best and fit into the room, which is quite complex. He would also have to find a reliable company to execute the alterations. All in all this would not be very difficult.

high , which is something that is done quite often. Together with a bathroom equipment supplier he would have to make a design and decide which arrangement would suit him best and fit into the room. They could also help him find a reliable company to execute the alterations. All in all this would not be too difficult.

Scenario Three

Suppose a 78 years-old woman finds herself in the following situation: her sense of hearing has decreased rapidly lately. When she talks to people in person, the problem isn't that serious, she can still understand them fairly well, but using the telephone has become very hard, even at its loudest. This poses a serious problem for her, because her children live far away and cannot visit her every day. They used to phone her very regularly, but now she's afraid she may have to do without this contact. How can she cope with this problem?

Per She could try to accept that phoning is no longer an option. In case of an emergency she will always be able to reach them somehow and maybe they will come and visit her more often when phoning no longer is an option. Apart from that she could see her neighbours and friends more often.

Soc She could ask the woman next door to help her with calling her children. If she cannot understand them, this woman could listen in on the conversation and tell her. This way she would still be able to contact her children regularly. She is very friendly with her neighbours and they would definitely be willing to help her.

Env She could phone her children using a computer, through the Internet. Her children already have computers at home and at work and they could install one in her home. With the computer people can communicate by typing and reading which is just as fast as phoning. This way they could still contact each other regularly, but she would have to learn to use a computer.

Example of self-efficacy manipulation:

low An apparatus like that looks rather complex, somewhat similar to a television and a typewriter, but using it is very complicated. Nowadays many people can operate a computer, but these are primarily young people, at her age she will not master it that easily.

high An apparatus like that may look rather complex, but using it is really rather simple, somewhat similar to using a television and a typewriter. Nowadays many people can operate a computer, young people, but older people as well, so she will be able to master it too.

Scenario Four

In the bathroom and kitchen of this woman, cantilever windows are the only ventilation she has available. But she can't operate them, because they are too heavy to handle that high up. She could probably manage by climbing on a chair, but she doesn't like heights and is afraid to fall down and break something, on account of her frail bones.

Per She could leave the doors of the kitchen and bathroom open, so that the air can still circulate. Then she would only have to climb on a chair if it gets really muggy.

Soc Her cleaning lady comes by twice every week. She could ask her to open the windows when she comes and close them before she goes, so that the house smells fresh again.

Env She could arrange to have extended rods fixed to the windows. She saw this somewhere once; you can then easily operate the windows at shoulder height. Of course she couldn’t construct the rods herself and she doesn’t think anyone in her family would be handy enough.

Scenario Five

A 70 year-old woman recently started to use a wheelchair. Now she no longer can cook in her kitchen even though she loves to, because the lower cabinets are in her way, so that she can't reach the kitchen sink. She thought of the following options:

Per If she really loves cooking that much, she could accept the fact that she experiences inconvenience. Maybe she could do as much as possible at a kitchen table.

Soc She could arrange ameals-on-wheels service and have them bring her dinner every day, although she would then have to accept that she has to give up cooking for herself.

Env She could have the kitchen altered to accommodate the wheelchair. This would imply removing some of the cabinets and raising the work top, so that the wheelchair could roll underneath it. However this would be a major alteration, and would not be cheap.

Scenario Six

A 79 year-old man lives alone in his own house. He likes the house to be fairly warm, because he spends most of the day seated and hence feels cold pretty easily. The cold causes aches in his bones and muscles. Every morning he suffers from the fact that it takes such a while for the central heating to warm up his house. He thought of the following options:

Per He could just leave it the way it is now. It has always been like this and he doesn't really need fancy appliances. He could put a blanket on his legs in the morning to prevent them from getting cold.

Soc He could have a thermostat installed and programmed by his son. So that the central heating warms up his house at the same time every morning and stops at a given time in the evening. Since he cannot change the program himself, this wouldn't be very flexible if his daily pattern varies, but on the other hand, he wouldn't have to learn to use the thermostat.

Env He could have the thermostat installed and learn how to program it himself. Then he could schedule the central heating to start half an hour before he gets out of bed the next day and end half an hour before he goes to bed. The house would always be comfortably warm, without wasting too much energy.

APPENDIX C
PROBLEM SCENARIOS WITH IMPORTANCE MANIPULATION

Four sets of two problem scenarios were designed for the second experiment (one less important, one more important). These are based on scenarios two, three, four, and six of the first experiment. The sets of adaptive strategies for these scenarios and self-efficacy manipulations remained unchanged.

Below you will find the translated versions of the scenarios.

Scenario Two

less important version

A 72 year-old woman, who makes dolls as a hobby has a hobby room with cabinets full of materials. However, because she can't kneel down or bend very well, she has problems reaching the materials that lie at the bottom of these cabinets.

more important version

A 72 year-old woman, who makes dolls as a hobby has a hobby room with cabinets full of materials. However, because she can't kneel down or bend very well, she has problems reaching the materials that lie at the bottom of these cabinets. Now she can no longer practice her hobby and is forced to give it up.

Scenario Three

less important version

The sense of hearing of a 78 years-old woman has decreased rapidly lately. Using the telephone has become impossible for her. Luckily, her children do not live far away and they can easily visit her. (*In the solutions, "children" were replaced by "relatives"*)

more important version

The sense of hearing of a 78 years-old woman has decreased rapidly lately. Using the telephone has become impossible for her. Now she's afraid she may have to do without the contact with her children, who live far away.

Scenario Four

less important version

In the bathroom and kitchen of this woman, cantilever windows are the only ventilation she has available. But she can't operate them, because they are too heavy to handle that high up.

She is bothered by the fact that she can still smell the cooking and bathing odours after a few hours.

more important version
In the bathroom and kitchen of this woman, cantilever windows are the only ventilation she has available. But she can't operate them, because they are too heavy to handle that high up. This causes serious problems because she gets very short of breath and subsequently needs help from others because she cannot function independently anymore.

Scenario Six
less important version
A 79 year-old man lives alone in his own house. He likes his house to be fairly warm, because he spends most of the day seated and hence feels cold pretty easily. Every morning he is bothered by the fact that it takes such a while for the central heating to warm up his house.

more important version
A 79 year-old man likes his house to be fairly warm, because he spends most of the day seated and hence feels cold pretty easily. Every morning he suffers from the fact that it takes such a while for the central heating to warm up his house. The cold causes serious aches which prevent him from washing and dressing himself.

BIOGRAPHICAL NOTE

I was born in Helmond, the Netherlands, on a Tuesday, September 2, 1969. I spent my childhood in Helmond, Zevenaar, and Baarlo and finally ended up in Goirle, where I attended the Mill Hill College. After obtaining my Gymnasium-B diploma there in June 1987, I entered Eindhoven University of Technology. Although I started out studying medical mechanical engineering, I became fascinated with the study of 'Technology and Society', and graduated there with a specialisation in environment-behaviour studies. A few months after my graduation, I started this Ph.D. project. Today, almost five years later, this project ends with the completion of this dissertation. At present I am still working at Eindhoven University of Technology, where I was appointed lecturer and researcher at the faculty of Technology Management.

Stellingen behorende bij het proefschrift *'A tale of two adaptations: coping processes of older persons in the domain of independent living'*

1. De nabije toekomst wordt, demografisch gezien, gekenmerkt door toenemende 'vergrijzing' - steeds meer en oudere ouderen - en 'ontgroening' - steeds lagere geboortecijfers. In tegenstelling tot wat deze terminologie doet vermoeden wordt de wereld hiermee niet automatisch minder kleurrijk.

2. Vaak wordt aangenomen dat ouderen steeds minder flexibel worden en makkelijker hun doelen opgeven, ofwel accommoderen, wanneer zij problemen tegenkomen. Wanneer de waargenomen eigen effectiviteit van ouderen echter hoog is zullen zij eerder kiezen voor assimilatieve, doelgerichte oplossingen en bereid zijn daarvoor inspanningen te leveren (dit proefschrift).

3. In onderzoeken onder jongeren wordt competentie vaak gedefinieerd als het geheel van adaptieve cognitieve, emotionele, gedrags- en sociale attributen waarover een individu kan beschikken en denkt te kunnen beschikken (Masterpasqua, 1989). In schril contrast daarmee staat de gebruikelijke operationalisatie van competentie als een score op ADL-vaardigheden (algemene dagelijkse levensverrichtingen) in onderzoeken onder ouderen (dit proefschrift).

   Masterpasqua, F. (1989). A competence paradigm for psychological practice. American Psychologist, 44, 1366-1371.

4. Als men als doel heeft ouderen te steunen bij het zelfstandig wonen en het omgaan met problemen in hun woning, is het niet toereikend geavanceerde hulpmiddelen en aanpassingen te ontwikkelen. Ontwerpers en hulpverleners moeten daarnaast inzicht hebben in de complicaties die ouderen tegenkomen óf voorzien in het hele traject van het vinden, implementeren en gebruiken van deze produkten (dit proefschrift).

5. Veel psychologische theorieën beschrijven een tweedeling, bijvoorbeeld in appraisal processen, coping strategieën en manieren van informatieverwerking (Brandtstädter & Renner, 1990; Lawton & Nahemow, 1973; Lazarus & Folkman, 1984; zie verder Savelsbergh, 1998, stelling 5). Dat de wereld zo eenvoudig in elkaar zou zitten is echter een sprookje.

   Brandtstädter, J., & Renner, G. (1990). Tenacious goal pursuit and flexible goal adjustment: Explication and age-related analysis of assimilation and accommodation strategies of coping. Psychology and Aging, 5, 58-67.

   Lawton, M. P., & Nahemow, L. (1973). Ecology and the aging process. In C. Eisdorfer & M. P. Lawton (Eds.), The psychology of adult development and aging (pp. 619-674). Washington: American Psychological Association.

   Lazarus, R. S., & Folkman, S. (1984). Stress, appraisal, and coping. New York: Springer.

   Savelsbergh, E. R. (1998). Improving mental representations in physics problem-solving. Thesis, Twente University, Enschede.

6. Vaak is een kijkje in jezelf leerzamer dan een reis om de wereld.

7. Onderzoek is in belangrijke mate afhankelijk van creativiteit: je zou moeten streven naar een goede balans tussen persoonlijke ideeën en vaardigheden en onpersoonlijke structuur en regels. De veilige weg kiezen door je alleen te laten leiden door de algemeen geaccepteerde structuur en regels minimaliseert je verantwoordelijkheden en risico's als onderzoeker en toont dat je weet "hoe je het spel speelt", maar het beperkt tegelijkertijd de bijdrage die je onderzoek aan de wetenschap zou kunnen leveren (naar Zeisel, 1984, p. 31).

   Zeisel, J. (1984). Inquiry by design; Tools for environment-behavior research. New York: Cambridge University Press.

8. Mensen lossen problemen niet op in hun hoofd, maar door te communiceren en samen te werken met een groep vrienden (Meacham & Cooney Emont, 1989). Om deze reden zouden ook informele bijeenkomsten tussen AiO's, zoals bijvoorbeeld picknicks, conditietraining of koffiepauzes, niet bekritiseerd, maar juist gestimuleerd moeten worden.

   Meacham, J. A., & Cooney Emont, N. (1989). The interpersonal basis of everyday problem solving. In J. D. Sinnott (Ed.), Everyday problem solving: theory and applications (pp. 7-23). New York: Praeger.

9. Het is inderdaad best bijzonder een vrouw te zijn met een ir.-titel. Deze bijzonderheid zit hem echter niet in de titel, maar volledig in het vrouw-zijn.

10. Een persoonlijke kaft maakt stellingen bij een proefschrift overbodig.

Yvonne Slangen-de Kort