

Graduate School “Integrative Competence and Well-Being”

**ON THE THEORY OF LIFE BALANCE:  
THE RELATION TO SUBJECTIVE WELL-BEING  
AND THE ROLE OF SELF-REGULATION**

**A Thesis**

Submitted to the  
Faculty of Human Science of the University of Osnabrück  
in Partial Fulfillment of the Requirements for the Degree of

**„Doktor der Naturwissenschaften“ (Dr. rer. nat.)**

by

**Peter Gröpel**

M.S., University of Trnava, Slovakia, 2001

Osnabrück, May 2005

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Graduate School “Integrative Competence and Well-Being”

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Graduiertenkolleg „Integrative Kompetenzen und Wohlbefinden“

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# **On the Theory of Life Balance: The Relation to Subjective Well-Being and the Role of Self-Regulation**

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Submitted to the Faculty of Human Science of the

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## Abstract

The purpose of this work was to investigate basic personality mechanisms underlying life balance, to specify why life balance is beneficial for peoples' well-being, and to identify specific self-regulatory competences that affect that balance. The approach of life balance was initially conceived of in terms of the work-family balance or the work-family conflict. Addressing the suggestion that the work-life system is multi- and not just two dimensional, life balance as a multidimensional construct was operationalized and investigated in the present research. Life balance was defined in terms of appropriate proportion of time spent in major life domains that comprises of activities related to work, social contact and family, health, and the overall meaningfulness of life. Two life balance measurements - the Life-Balance Checklist and the Life-Balance Questionnaire - were constructed as a part of this research. Both measures were found to have sufficient internal and external validity. The main findings were: (a) the congruence of needs, goals and goal attainment within the time invested in goal-relevant behavior predicted the level of life balance and may be viewed as a mechanism underlying life balance; (b) the fulfillment of psychological needs mediated the relationship between life balance and subjective well-being. Thus, balancing time spent across various life domains predicted the level of well-being only if the individual's needs were fulfilled within that time; (c) affective coping (i.e., action orientation) buffered the negative impact of stress on life balance; (d) time management behavior was found to have a positive impact on life balance through improved perception of control over time and reduced procrastination; and (e) persons especially skilled in self-motivation

and self-relaxation reported to high competence to choose and attain self-concordant goals (i.e., self-determination) and, as a result, to balance their time spent across life domains more effectively.

*Key words:* life balance, work-family balance, need satisfaction, subjective well-being, self-concordance, life stress, action orientation, self-regulation, time management

Thesis Supervisor: Prof. Dr. Julius Kuhl

## Introduction

Everybody has probably heard or read the term “balance” when listening to people, watching TV or reading journals and books. One might even feel that his or her life is “out of balance”, but he or she may be confused as to what it would actually look or feel like to be “balanced”. There are a number of different views and definitions that explain this term. Therefore, the first thing is to specify and discuss what will be meant by the use of the term “balance” in my dissertation thesis. In this work, *life balance* – an approach initially conceived of as *work-family balance* or *work-life balance* in psychological, sociological and economical literature – will be addressed. This approach focuses on the interactions among various life domains including their demands and responsibilities. In this sense, the problems of balancing life are thought to depend on how people *allocate their time* across various life domains (Senécal, Vallerand, & Guay, 2001; Seiwert, 2000). The term “balance” probably evokes the image of a scale for most people, suggesting that the amount of time spent in different activities such as at work, with family or friends, doing sport, etc. should be equal, or at least no one activity should be tipping the scale. However, this suggestion of equal time goes against the reality that different activities require different amounts of time and energy and at different times. The demands of life are not static either in day-to-day life or across the decades. The use of this term also implies that the amount of time spent in each life area is more important than the quality of that time, which is rarely the case. Anyhow, the term “balance” should be taken more as a “metaphor” for how people feel about their lives. Living a balanced life represents connection with and attention to what is valued and given priority in life. In other words, a balanced life represents something like a satisfying and productive life which integrates main life domains and expresses a person's unique wishes, interests, and values (Kofodimos, 1995). However, this view has some limitations. For example, some people may choose, for whatever reason, not to integrate their work and home lives but they still can perceive the balance. In addition, the notion of “productive life” might evoke materialistic view of goal attainment which does not fit very well with non-goal oriented activities. When it comes right down to it, there is really not a single definition that fits nicely into this issue, and it is doubtful that there ever will be. The lack of a clean term and definition, however, does not mean that one should give up the quest to live a more balanced life and, from a scientific point of view, that the issue of life balance can not be investigating and the implication from research can not be applied into praxis. In contrast, the topic of balancing life has become the subject of significant discussion in recent years (Hobson, Delunas, & Kesic, 2001) and, hence, merits the attention of

empirical research. For the research purpose, the best we can do is to operationalize the term “life balance”. In the next sections, I provide an operational definition of life balance as well as notes to its importance in human life. In addition, two other areas addressed in this thesis – subjective well-being and self-regulation – will be introduced. Finally, an overview about theoretical-empirical parts of my dissertation will be presented.

### *Life Balance and its Importance*

The topic of life balance starts from and has been mostly discussed in applied psychological disciplines such as work or family psychology. Theories and approaches within social psychology (e.g., the Scarcity Hypothesis, Chapman, Ingersoll-Dayton, & Neal, 1994) and personality psychology (e.g., Personality Systems Interaction Theory, Kuhl, 2001; the Self-Concordance Model within Self-Determination Theory, Sheldon & Elliot, 1999) provide a useful framework to explain several findings of life balance research. These theories will be discussed later by facing concrete research problems.

As noted above, the approach of life balance was initially conceived in terms of work-family balance (e.g., Hill, Hawkins, Ferris, & Weitzman, 2001) or work-family conflict (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). Work-family balance was defined as the degree to which an individual is able to simultaneously balance the temporal demands of both paid work and family responsibilities, whereas work-family conflict represented incompatibilities between work and family responsibilities because of limited resources like time and energy. However, the work-life system is multi- and not just two-dimensional (Warren, 2004; Seiwert 2000, 2001). We have to deal with more than two domains when we speak about life balance. Warren (2004), for example, notes that over 170 different life domains have been identified in previous investigations. The major ones include domains of work, financial resources, leisure, dwelling and neighborhood, family, friendships, social participation and health. Seiwert (2000, 2001) distinguishes apart from work and family two other life domains – health and meaningfulness of life – that are important in human life as well. His approach is based on the Nossrat Pesseschkian’s (in: Seiwert, 2000) intercultural research that identified four domains as the most important areas of life. These represent the main factors which reflect the multidimensionality of life. The life areas are: (1) work/achievement, (2) social contact/relationships, (3) health/body, and (4) meaningfulness of life.



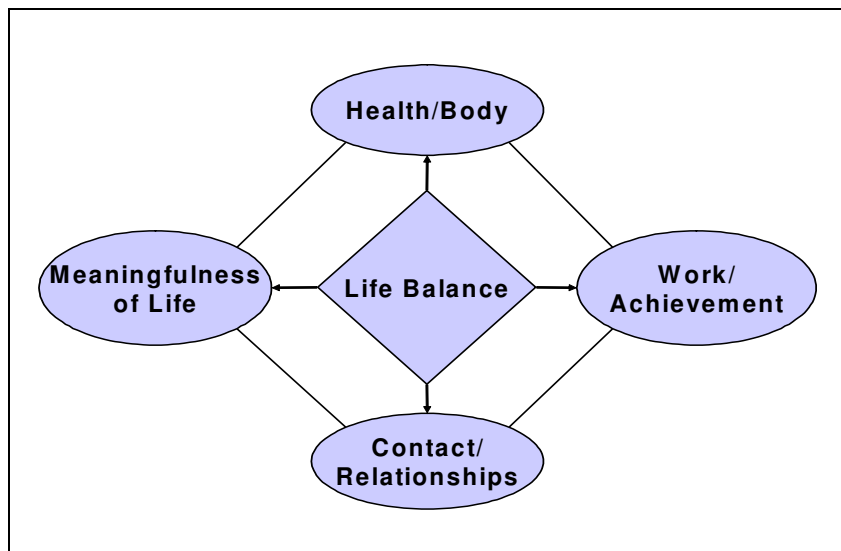


Figure A.. Seiwert's Life Balance Model (2001, p.24)

The work/achievement area includes features such as job, studies, career, striving for success, wealth etc., whereas the contact/relationships area represents the human need for social contact and includes family, friends, colleagues, or social recognition. The health/body area refers to the sufficiency of sleeping, relaxation, fitness and sport, recreation, or healthy eating. The last area, meaningfulness of life, includes the sense of life, religion or life philosophy, values, self-realization, self-actualization, and self-fulfillment. According to Seiwert (2000, 2001), all these areas of life are closely related to each other (see Figure A). This means, that neglecting or inappropriately preferring one life area will have an impact on other areas. For example, spending too much time and energy for work could lead to health problems (e.g., somatic complains, infarct, sleeping disorders), conflicts in the family (e.g., with one's partner), and also to dissatisfaction and alienation (the work doesn't provide personal meaning any longer). The result, then, is the loss of energy and motivation for work, and less work effectiveness. On the other hand, spending too little time and energy for work usually leads to problems at the workplace and loss of employment which could also affect other life areas (e.g., stress, depression, existential problems, family problems, less self-actualization). Thus, focusing on life balance, we will deal with four presented life areas that cover central domains in people's life. Based on Seiwert's theoretical approach, the balanced relationship among these life areas will be studied. As noted before, the term "life balance" refers to how much time people spend on the most important life areas. We speak about balance when the person subjectively perceives his or her time spent in each of these life areas as *appropriate*. Thus, I operationalize life balance as the degree to which a person is able to spend appropriate time on each of the

most important life areas – work/achievement, contact/relationships, health/body, and meaningfulness of life.

Recent research supported the importance of the balance for human life. Failure to achieve the balance was found to be associated with a variety of serious negative consequences for both individuals and organizations. Most important personal and societal consequences of failing to balance life domains are:

- increased levels of stress and somatic complaints (Burke, 1988; Chapman, Ingersoll-Dayton, & Neal, 1994; Googins, 1991)
- depression and lower mental health (Beatty, 1996; Googins, 1991; Grzywacz & Bass, 2003)
- greater likelihood to misuse alcohol (Frone, Russel, & Cooper, 1993; Grzywacz & Bass, 2003)
- less life satisfaction, well-being and overall decrease in the quality of life (Adams, King, & King, 1996; Arye, 1992; Fisher, 2002; Grant-Vallone & Donaldson, 2001; Greenhaus, Collins, & Shaw, 2003; Gröpel, 2004; Noor, 2004; Rice, Frone, & McFarlin, 1992)
- decrease in the quality of family life, higher rates of family conflicts and marriage breakup (Bolger, DeLongis, Kessler, & Wethington, 1989; Crouter, Bumpus, Head, & McHale, 2001; Crouter, Perry-Jenkins, Huston, & Crawford, 1989; Higgins, Duxbury, & Irving, 1992; Frone et al., 1993; Kofodimos, 1990)

The negative impact of imbalance on corporations is also substantial. The chronic inability of employees to balance work and life responsibilities was found to lead to the following:

- decreased job satisfaction and reduced productivity (Burke, 1988; Frone, Russell, & Cooper, 1992; Higgins et al., 1992; Kofodimos, 1990; Rodgers & Rodgers, 1989; Thomas & Ganster, 1995)
- greater likelihood of leaving the company, turnover intentions (Galinsky & Johnson, 1998; Haar, 2004)
- increased absenteeism and rising healthcare costs (Goff, Mount, & Jamison, 1990)

This research evidence strongly suggests the importance of achieving balance in life. A growing number of progressive firms have recognized the critical significance of life balance and designed corporate policies and programs to empower and assist employees in fulfilling their major life responsibilities (Hobson et al., 2001). These companies

offer innovative workplace programs such as flexible work hours and place, job sharing, on-site or subsidized child care and elder care, employee assistance programs, or supervisory training and coaching. Although relatively large interest has been turned to these “objective” programs, only a little research attention has focused on personality characteristics and differences related to life balance. Nevertheless, personality differences can play an important role by balancing life domains and, hence, should be implemented into workplace programs. For example, level of intrinsic motivation (Senécal et al., 2001) and interactions of goal-orientations (Kofodimos, 1990) were found to be strong predictors of balance. Because of the lack of empirical research on personality and life balance, the purpose of my thesis is to investigate basic personality mechanisms underlying life balance, to specify why life balance is beneficial for peoples’ well-being, and to identify specific personality competences that affect the balance. Implications for future research and practice will be also discussed.

### *Subjective Well-Being*

Subjective well-being (SWB) refers to how people evaluate their lives, and includes the form of condition (life satisfaction) and the form of affect (positive and negative mood; Diener, Suh, & Oishi, 1997). Thus, a person is said to have high SWB if she or he experiences life satisfaction and frequent joy, and only infrequently unpleasant emotions such as sadness or anger. In contrast, a person is said to have low SWB if he or she is dissatisfied with life, experiences little joy, and frequently feels negative emotions. Subjective well-being is structured such that these three primary components (life satisfaction, pleasant affect, and low levels of unpleasant affect) form a global factor or interrelated variables. Each of the three major facets of SWB can in turn be broken into subdivisions. For example, life satisfaction can be divided into satisfaction with various domains of life such as job satisfaction, marital satisfaction, satisfaction with relationships, and so forth. Pleasant mood can be divided into specific facets such as joy, activation, or calmness. Finally, unpleasant mood can be separated into sadness, anger, anxiety, and so on.

Subjective well-being can be assessed at the most global level, or at narrower levels, depending on one’s research purpose. For instance, one researcher might study life satisfaction, whereas another might study narrower topic of job satisfaction. The justification for studying more global level is that the narrower levels tend to co-occur (Diener et al., 1997). This means, that there is a tendency for people to experience similar levels of well-being across different aspects of their lives. Further, subjective well-being is defined

in terms of the internal experience of the respondents, and, hence, is measured from the individual's own perspective. Thus, SWB is not synonymous with mental health, because many criteria of mental health are dictated from outside by researchers and practitioners (Diener et al., 1997). People may be disordered even if they are happy. For example, Okun and George (1984) found objective health among the elderly to be only faintly correlated with SWB. Another important area in assessing SWB is the distinction between on-line measures of well-being (i.e., at the moment) and longer-term perspective. Using self-report scales, on-line perspective is often measured asking people to report how they feel right now, whereas in longer-term perspective the questions such as "How do you feel in general?" or "How happy have you been during the past month?" are asked. It depends on one's research purpose which perspective will be investigated. In psychological research, there are a lot of various methods and measures of well-being. Perhaps the most used are self-reports such as the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) which assesses life satisfaction, the WHO Well-Being Index developed by the World Health Organization (see e.g., Bonsignore, Barkow, Jessen, & Heun, 2001), and various adjective checklists like the Positive and Negative Affect Scale (PANAS; Watson, Tellegen, & Clark, 1988) measuring emotional well-being. However, because of the shortcomings of self-report measures, investigators work to develop other – more objective – ways of measuring SWB (e.g., people's frequency of smiling, their ability to recall positive versus negative events from their lives, reports from the target respondent's family and friends; Sandvik, Diener, & Seidlitz, 1993). Depending on various research purposes in my thesis, on-line as well as longer-term, self-report as well as implicit, and narrower as well as global SWB methods will be used. Addressing Diener's suggestions, mental health will not be assessed using SWB methods, but by the use of health related methods (e.g., the Symptom Checklist, Derogatis, 1994).

In recent research on work and family balance, subjective well-being has been frequently studied. Failure to achieve balance was significantly associated with low levels of well-being and life satisfaction (Adams et al., 1996; Arye, 1992; Grant-Vallone & Donaldson, 2001; Noor, 2004; Rice et al., 1992). Conversely, work-family balance was positively related to well-being, life satisfaction and quality of life (Fisher, 2002; Greenhaus et al., 2003; Gröpel, 2004). In addition, various facets of the major life domains were also found to be associated with SWB. For example, well-being was positively correlated with the quality of social relationships and negatively with the frequency of divorces (Gohm, Darlington, Diener, & Oishi, 1997, in Diener et al., 1997). Married people of both sexes

sexes reported higher SWB than those who have never been married, divorced, or separated (Lee, Secombe, & Shenan, 1991; Mastekaasa, 1992). Further, SWB was positively associated with social participation (Harlow & Cantor, 1996), goal strivings (Brunstein, 1993; Emmons, 1986; Sheldon & Elliot, 1999), subjective health (George & Landerman, 1984; Larson, 1978; Watten, Vassend, Myhrer, & Syversen, 1997), religion (Ellison, 1991; Hurtová, 2000; Myers, 1992; Pollner, 1989; Poloma & Pendelton, 1990), meaningfulness of life (Debats, 1996), and negatively with unemployment (Clark, Diener, & Georgellis, 2000; Džuka, 2001). This research evidence strongly suggests that work-family/work-life balance is related to well-being. However, previous research did not sufficiently explain why this relationship exists. Therefore, one of the purposes of my thesis is to specify this relationship. Why does the appropriateness of time spent on life domains predict the level of well-being? Based on the recent research on goal strivings (e.g., Brunstein, 1993; Emmons, 1986; Sheldon & Kasser, 1998) and self-concordance (e.g., Baumann, Kaschel, & Kuhl, 2004; Sheldon & Elliot, 1999), the mediation role of need fulfillment will be examined (see Paper 2).

### *Self-Regulation*

Recent research has begun exploring the complex process of self-regulation. Many interrelating factors appear to govern self-regulation, with no single factor responsible for its success or failure (Behncke, 2002). Self-regulation represents the process of managing different internal states and behavior. Karoly (1993) defines self-regulation as those processes, internal and/or transactional, that enable an individual to guide his/her goal-directed activities over time and across changing circumstances (contexts). Regulation implies modulation of thought, affect, behavior, or attention via deliberate or automated use of specific mechanisms and supportive meta-skills. The processes of self-regulation are initiated when routinized activity is impeded or when goal-directedness is otherwise made salient (e.g., the appearance of a challenge, the failure of habitual action patterns, etc).

Self-regulation appears to be the stable element attempting to guide behavior along a specific path to a directed aim or goal. There are a number of specific volitional factors that characterize the process of self-regulation. For example, Kuhl and Fuhrmann (1998) decomposed self-regulation in up to 40 functions including basic volitional competences such as self-motivation, self-relaxation, self-determination, goal setting, scheduling, and many others volitional abilities. Karoly (1993) similarly reports to a large number of components characteristic for self-regulation such as goal setting, self-monitoring, activation

and use of goals, discrepancy detection and implementation, self-evaluation, self-efficacy and so forth. Various models of self-regulation differ in their procedural and conceptual perspective as well as in mechanisms underlying self-regulation. Traditional approaches emphasize the mediating role of beliefs and other cognitive contents. For instance, the degree to which persons are able to self-regulate the enactment of their work-related intentions is attributed to their self-efficacy beliefs; that is, their beliefs that they will be able to initiate and successfully perform the intended behavior (Bandura, 1977). Similarly, time management skills such as goal setting and having a preference for organization appear to have beneficial effects on the job related outcomes if they give persons the belief that they have control over time (Macan, 1994). Kuhl's (2001) theory of Personality Systems Interactions (PSI-theory) represents another approach to self-regulation that is based on functional-design perspective. Instead of focusing on cognitive content, this approach addresses the functional architecture underlying self-regulation; that is, the dynamics of interactions among various personality systems. However, the content-based approaches and the functional-design approach are not incompatible with the notion that the content of thought such as cognitive beliefs can have a functional significance (Kuhl, 2000). Thus, the functional framework described by Kuhl (2001) is meant to extend rather than replace content-based approaches: It spells out the mechanisms that affect self-regulatory behavior over and above the self-regulatory effects of cognitive beliefs and strategies. In my thesis, both content- and functional-based approaches will be used. As noted before, only a little attention has focused on personality competences in life balance research. However, self-regulation skills may impact the person's ability to balance his or her life. Seiwert (2000) assumes time-management behavior (e.g. setting goals, prioritizing, scheduling) to influence life balance. Self-determination is also thought to affect the balance. According to Kofodimos (1990), wishes and goals that are not self-determined may influence loyalty toward striving for mastery and avoiding intimacy. Failures in balancing work and personal life are often the result.

Based on the previous suggestions, I will focus on two models by investigating the role of self-regulation. First, addressing Seiwert's (2000) assumption, time management behavior will be examined. Time management means an effective use of time and includes activities such as setting goals, prioritizing, planning, scheduling, organizing the workplace and controlling (Lakein, 1973). Macan, Shahani, Dipboye, and Phillips (1990) found three time management factors that reflect some of self-regulation competences: (1) the setting goals and prioritizing, (2) the planning and scheduling, and (3) a preference for organiza-

tion. According to Macan's (1994) model of time management, these three factors lead to the person's belief that he or she has greater perception of control over his or her time. The perception over time is further directly related to the outcomes such as job satisfaction or job-induced tension. It can be hypothesized that the self-regulation skills included in time management behavior impact life balance through the perception over time (see Paper 5).

Second, self-determination will be examined. The Personality Systems Interaction Theory (PSI-Theory; Kuhl, 2001) provides a useful framework to understand the functional basis of this competence. The theory focuses on functional relationships among affective and cognitive macrosystems (i.e., the dynamic processes that underlie human mental functioning). The cognitive macrosystems are: *intention memory* (IM) – the memory for explicit intentions supported by sequential-analytical operations and prefrontal left-hemispherical processing, *extension memory* (EM) – an extended semantic network operating according to connectionist principles and supported by intuitive-holistic processes of prefrontal cortex of the right hemisphere, *intuitive behavior control* (IBC) – a system that provides routines for performing an intended action, and *object recognition* (OR) – a system specialized on discrepancy-sensitive recognition of "objects." PSI theory holds that the effectiveness of self-regulation is influenced by the relative activation or strength of each system, as modulated by affect. Two modulation assumptions of the theory form its volitional core. First, positive affect facilitates the enactment of intentions (IBC) whereas the inhibition of positive affect facilitates the maintenance of intentions in intention memory (IM) and inhibits their enactment. Vice versa, activation of intention memory (e.g., facing difficulties, frustration) reduces positive affect. Second, negative affect reduces activation of extension memory (including self), inhibits the contact to the self, and activates the discrepancy-sensitive object recognition (OR) whereas the inhibition of negative affect activates extension memory. Vice versa, activation of extension memory and the self reduces negative affect.

Extension memory is thought to be most important for forming self-determined goals because of its extended networks of remote semantic associations such as meaningful experiences, options of action, personal values, implicit motives, and many other aspects of the self. Although the word '*self*' is used in many ways in contemporary psychology, I use to refer to the more-or-less integrated center which comprises a network of personal representations, holistic feelings, personal interests and values (Kuhl, 2001), and has potential to take control of the bio-cognitive machinery in such a way as to maximize organismic need satisfaction (Sheldon & Elliot, 1999). Only if self-representations are available, explicit

intentions can be matched with these representations and self-congruent goals may be formed. For this process, information between intention and extension memory must be exchanged. More specifically, IM needs to “communicate” with EM in order to form valid representations of implicit needs in terms of self-determined goals. An asymmetric activation of IM or an inhibition of EM (i.e., inhibition of self-access) is expected to disturb the communication process and reduces congruence between explicit intentions and implicit needs. Thus, *self-determination* – the ability to choose and perform self-concordant goals, tasks and activities (e.g., goals that reflect person’s authentic needs, interests and values) – depends on “communication” between extension and intention memory. This is expected to occur by the relative activation of both systems. As noted above, these systems are modulated by affect. Affective balance (i.e., middle level of positive and negative affect) is therefore needed for the information exchange between EM and IM. However, stressful life events such as problems, difficulties, mistakes, frustration etc. impair affective balance. Hence, abilities that help one to cope with these events are needed for maintaining affective balance. Action orientation, a general ability to self-regulate affective states under stress (Kuhl, 1994a), represents a coping skill that was found to be beneficial for balancing affective states. Its mechanism is connected with intuitive affect regulation (Koole and Jostmann, 2004) and closely linked to *self-motivation* and *self-relaxation* – two basic competences that are viewed as a motor of self-determination (Kuhl, 2001). Self-motivation is defined as the generation of positive affect associated with a goal or an activity on the basis of activation of appropriate self-representations (e.g., values associated with the activity; Kuhl, 2000). Facing an unpleasant task or activity, the mechanism of self-motivation activates the self (based on autobiographical memory) in search for some positive contents that may increase motivation for the task (i.e., it helps to overcome the unpleasant situation toward a progress on the initially unpleasant task). Self-relaxation is the downregulation of negative affect and internal tension through the activation of the self (Kuhl, 2001). In a stress or tension situation, the mechanism of self-relaxation helps one to become ‘relaxed’ without avoiding unpleasant aspects of the situation, that is, through putting the unpleasant aspects in a context of positive or meaningful experiences (e. g., “I feel sad now, but I have recovered from this mood so many times”). After restoring the relaxed state, activities, tasks and life demands can be better perceived, decisions can be better made, and goal oriented behavior can be activated.

To come back to life balance, following assumptions can be made: Based on Kofodimos’s (1990) suggestion, that performing self-determined goals is related to maintaining



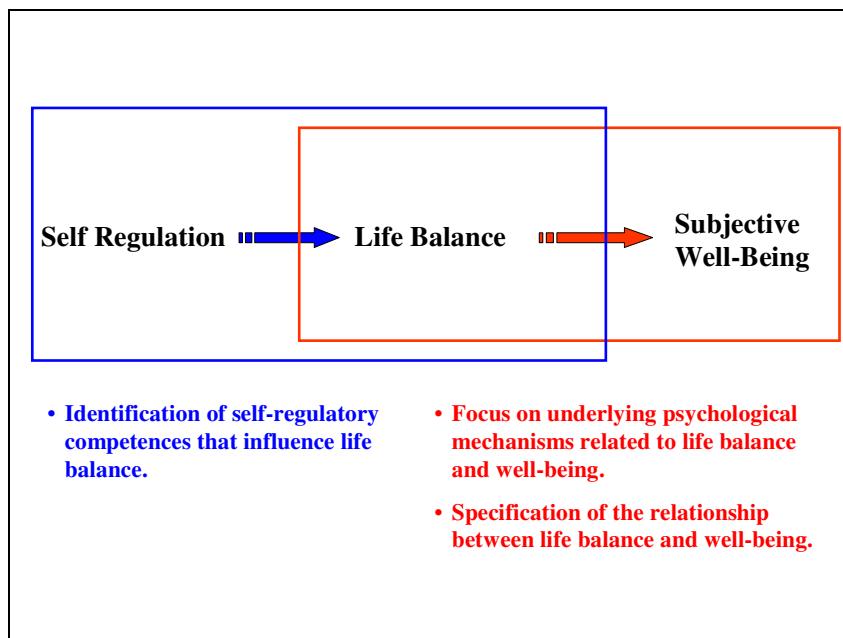
balance in life, self-determination is expected to affect life balance (see Paper 5). In addition, self-motivation and self-relaxation – two basic competences linked to self-determination – might have at least an indirect effect on life balance through self-determination. Further, recent research on work-life balance found a negative impact of stress on this balance (Burke, 1988; Fisher, 2002). However, is it possible to maintain life balance even under stress? As noted above, self-motivation and self-relaxation are closely related to the mechanism of action orientation which represents an ability to cope with stress (Kuhl, 1994a). Similarly, time management behavior is viewed as a form of active coping (Carver, Scheier, and Weintraub, 1989; Leiter, 1991). Thus, it can be expected that the mechanism of action orientation (see Paper 4) and the time management behavior (see Paper 5) might help one to cope with stress and not to fail in balancing life domains.

### *The Present Research - Overview*

Figure B shows the orientation of the present research. I focus especially on two directions: First, the consequences of life balance will be examined and the relation to well-being specified (Paper 2 & 3). Second, antecedents of life balance will be addressed (Paper 4 & 5). Following the implications of previous research on work-family/work-life balance, several aims were set for my research:

- Addressing the suggestions that life system is multi- and not just two-dimensional (Amundson, 2001; Warren, 1993; Seiwert, 2000), life balance as a multidimensional construct will be operationalized and investigated. For this purpose, two assessment methods were developed by the author. The first aim of my research is to test the validity of these methods.
- Second, previous research strongly suggests that work-family/work-life balance is related to well-being. However, this research did not sufficiently explain why this relationship exists. Therefore, I try to specify the relationship between life balance and well-being. Why does life balance predict the level of well-being?
- Third, life balance and its impact on well-being will be examined in more detail. Whereas previous investigations revealed a strong evidence of the importance to balance one's own life, little research focused on underlying psychological mechanisms related to this balance. Nevertheless, it is important to know which personality functions provide a basis for balancing life domains. Therefore, the aim is to address the functional basis of life balance and its impact on well-being.

- Fourth, stress was found to impact life balance negatively. However, is it possible to maintain life balance under stress? To answer this question, the coping role of action orientation and time management will be examined.
- Finally, self-regulatory competences in relation to life balance will be tested. Which personality skills are beneficial for balancing life demands? Can the claims about time management be supported by empirical research? Personality abilities have been broadly discussed in theoretical approaches (e.g. Seiwert, 2000). In previous research, however, personality competences have not been sufficiently examined. Therefore, the aim is to investigate the role of self-regulation in balancing life domains.



*Figure B.* Focus of the present research.

The dissertation consists of five separate papers written in APA standards, that is, they provide theoretical background, research problems, hypotheses, methods, results and discussion. Therefore, I did not provide wide theoretical background in the present introduction section. Theoretical information to each research problem is given in the relevant paper. The papers are organized as followed:

- In Paper 1, life balance is operationalized and internal and external validity of the two new measures of life balance – the Life-Balance Checklist and the Life-Balance Questionnaire – is tested.
- Paper 2 includes three separate studies investigating the mediating role of need fulfillment in the relationship between life balance and subjective well-being.

- In Paper 3, mechanisms underlying life balance and their effects on explicit and implicit well-being are examined.
- In Paper 4 I test the hypothesis that affective coping (i.e., action orientation) buffers the negative impact of stress on life balance.
- In Paper 5, proposed antecedents of life balance (self-regulatory competences such as time management behavior, self-determination, self-motivation, and self-relaxation) are investigated.

In line with current publication standards, three of my papers consist of more than one study. For my dissertation, I performed research with five samples of participants: two preliminary studies were conducted by developing the measures of life balance; three main studies (including one experiment) were oriented toward attaining the aims of my research. Although I use the same data set across several papers, I examine different hypotheses and use different variables (apart from life balance variables) in the papers.

For publication purposes, the papers are written according to APA Publication Manual (5<sup>th</sup> edition). However, in the interest of brevity, several changes were made for the papers included in my dissertation:

- Instead of double-spacing of paragraphs, 1.5 line spacing will be used.
- Tables, figures (including figure caption), and footnotes will not be presented on separate pages but in relevant text sections.
- First page will not be formatted according to APA Manual, and will include abstract of the paper.
- Appendixes and references will be presented at the end of the dissertation.

At the end of my thesis I summarize the findings of my research and discuss theoretical and practical implication.

PAPER 1      **Assessment of Life Balance: Internal and External Validity of the Life-Balance Checklist and the Life-Balance Questionnaire**

*Abstract:* Recent research on work and family balance investigated the work-life system as a two-dimensional system. Addressing the hypothesis that this system is multi- and not just two dimensional, life balance as a multidimensional construct was operationalized and investigated in the present study. Two life balance measurements - the Life-Balance Checklist and the Life-Balance Questionnaire - were constructed by the author and tested on their internal and external validity. Using the classical test theory and the item-response theory, both measures were found to have sufficient internal validity. External validity was tested by performing predictor criterion analyses. External criterions such as well-being, stress and health were selected according to the findings of previous research on work-family balance. Results provided support for the external validity of both life balance measures. Thus, both scales can be adequately used in future research on life balance.

## Assessment of Life Balance: Internal and External Validity of the Life-Balance Checklist and the Life-Balance Questionnaire

People today are more likely now than ever to be concerned with how to balance their lives. The demographic composition of workforce has changed dramatically in recent years. Organizations pressure people to focus on work and people often justify their hard work by saying it is a temporal necessity important for their career. Through this focus on work, they hope to secure their job. However, the pressures continue; long hours and energy spent in work and an increase in job demands result in an increased risk of overload, conflict with partners or health problems. The difficulties in balancing life demands have become the subject of significant discussion and research (Hobson, Delunas, & Kesic, 2001). However, this discussion and the previous research focused mostly only on two domains of life – work and family. Work-family balance and work-family conflict have been studied with the aim to identify antecedents and consequences of this balance or conflict, respectively. Some authors argue that the work-life system is multi- and not just two-dimensional (Amundson, 2001; Warren, 2004; Seiwert 2000, 2001). Therefore, the purpose of the present study is to define the construct of *life balance* that reflects the multidimensionality of life, and to create and validate two measurements of life balance.

### *Theoretical Background*

In the psychological literature, work-family balance is defined as the degree to which an individual is able to simultaneously balance the temporal, emotional, and behavioral demands of both paid work and family responsibilities (Hill, Hawkins, Ferris, & Weitzman, 2001). On the other side, work-family conflict represents incompatibilities between work and family responsibilities because of limited resources like time and energy (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). However, when dealing with the work-life system and life balance, these definitions have their limitations. As noted above, the work-life system can be regarded as multidimensional. We have to deal with more than two domains when we speak about life balance. For this purpose, I will use Seiwert's theoretical approach for my study. Seiwert (2000, 2001) distinguishes apart from work and family two other life domains – health and meaningfulness of life – that are important in human life as well. His theory is based on the Nossrat Pesseschian's (in: Seiwert, 2000) intercultural research that identified four domains as the most important areas of life. These represent the main factors which reflect the multidimensionality of life. The life areas are:

(1) work/achievement, (2) contact/relationships, (3) health/body, and (4) life meaningfulness. The work/achievement area includes features such as job, studies, career, striving for success, wealth etc. The contact/relationships area represents the human need for social contact and includes family, friends, colleagues, or social recognition. The health/body area refers to the sufficiency of sleeping, relaxation, fitness and sport, recreation, or healthy eating. The last area, life meaningfulness, includes the sense of life, religion or life philosophy, values, self-realization, self-actualization, and self-fulfillment. According to Seiwert (2000), all these areas of life are closely related to each other. This means, that neglecting or inappropriately preferring one life area will have an impact on other areas. For example, spending too much time and energy for work could lead to health problems (e.g., somatic complains, infarct, sleeping disorders), conflicts in the family (e.g., with one's partner), and also to dissatisfaction and alienation (the work doesn't provide personal meaning any longer). The result, then, is the loss of energy and motivation for work, and less work effectiveness. On the other hand, spending too little time and energy for work usually leads to problems at the workplace and loss of employment which could also affect other life areas (e.g., stress, depression, existential problems, family problems, less self-actualization). Thus, focusing on life balance, I will deal with four presented life areas that cover central domains in people's life. Based on Seiwert's theory, the balanced relationship among these life areas will be studied. Further, the balance will be investigated from a temporal perspective because time is an important resource. It refers to how much time people spend on the most important life areas – work/achievement, contact/relationships, health/body, and life meaningfulness. I speak about balance when the person subjectively perceives his or her time spent in each of these life areas as *appropriate*. As noted by Seiwert (2000), it does not mean any quantitative characteristic according to logic that the amount of time spent in each of life areas should be equal (i.e., 25% of daily time for work, 25% for relationships, etc.), but a qualitative characteristic in the sense of subjectively perceived appropriateness of time allocation. The life balance can be operationalized as the degree to which a person is able to spend appropriate time on each of the most important life areas – work/achievement, contact/relationships, health/body, and meaningfulness of life.

### *Empirical Background*

Recent research on work and family balance supported the importance of the balance for human life. Failure to achieve the balance was found to be associated with a vari-

ety of serious negative consequences for both individuals and organizations, such as increased stress and somatic complaints (Burke, 1988; Chapman, Ingersoll-Dayton, & Neal, 1994; Googins, 1991), depression (Beatty, 1996; Googins, 1991; Grzywacz & Bass, 2003), greater likelihood to misuse alcohol (Grzywacz & Bass, 2003; Frone, Russel, & Cooper, 1993), less life satisfaction and overall decrease in the quality of life (Adams, King, & King, 1996; Arye, 1992; Fisher, 2002; Grant-Vallone & Donaldson, 2001; Greenhaus, Collins, & Shaw, 2003; Gröpel, 2004; Noor, 2004; Rice, Frone, & McFarlin, 1992), decrease in the quality of family life, family conflicts and marriage breakup (Bolger, DeLongis, Kessler, & Wethington, 1989; Crouter, Bumpus, Head, & McHale, 2001; Crouter, Perry-Jenkins, Huston, & Crawford, 1989; Higgins, Duxbury, & Irving, 1992; Frone et al., 1993; Kofodimos, 1990), decreased job satisfaction and reduced productivity (Burke, 1988; Frone, Russell, & Cooper, 1992; Higgins et al., 1992; Kofodimos, 1990; Rodgers & Rodgers, 1989; Thomas & Ganster, 1995), greater likelihood of leaving the company (Galinsky & Johnson, 1998), and increased absenteeism (Goff, Mount, & Jamison, 1990). Some of the variables in the studies cited can be criteria for testing external validity of life balance instruments. The Seiwert's (2000, 2001) life balance theory is a relatively new approach that has not been systematically investigated. Therefore, this study provides the first step of systematic research in this area. I will validate two instruments (which will be presented in the following sections). Either life balance instrument includes four subscales – work, relationships, health, and meaningfulness of life. Using the two life balance instruments, I expect relationships with well-being, stress and health scales as the ones found in work-family research.

#### *The Life-Balance Checklist (LBC)*

The Life-Balance Checklist (*LBC*; see Appendix A) is a self-report scale constructed by the author according to the operational definition of life balance. In this scale, the appropriateness of the proportion of time spent in the most important life areas is assessed. The *LBC* assesses degree to which participants spend appropriate time in each of the life areas according to their own view. The leading question is: “*How much time do you spend on...*” followed by 18 items related to the four life areas mentioned. For example: “How much time do you spend on... “Work”, or “Your career” (the work/achievement area); “Meeting friends”, or “Family” (the contact/relationships area); “Relaxation”, or “Sport/Fitness” (the body/health area); “Thinking about your own life”, or “Dealing with questions concerning the future” (the life meaningfulness area). Using explorative factor

analysis, all 18 items were selected from a larger number of items in a preliminary study. Participants respond to each item using a 10-Point Likert scale from *too little time* (1) to *too much time* (10). Both extremes represent the inappropriateness of time spent on areas of life, whereas the middle of the Likert scale (points 5 & 6) represents maximum appropriateness of time spent across life domains. Therefore, for my research purpose, each partial rating must be rescored before computing the total score of life balance. The logic of this rescoring is as followed: central points 5 & 6 are rescored to the value “5” which represents the maximal appropriateness of time spent; points 4 & 7 are rescored as yielding the value “4”; points 3 & 8 as “3”; points 2 & 9 as “2”; and extreme points 1 & 10 are assigned to the value “1” which amounts maximum inappropriateness of time spent. After this rescoring, the scores for each subscale (work/achievement, contact/relationships, body/health, life meaningfulness) can be computed by summing up resultant scores across relevant items. Summing up resultant scores across all items, higher score represents higher life balance.

#### *The Life-Balance Questionnaire (LBQ)*

The second measure of life balance is the Life-Balance Questionnaire (*LBQ*; see Appendix B) which is a classical self-report scale developed on the basis of the 6-items Work-Life Balance Scale (WLB-6; Gröpel, 2004). The WLB-6 measures the fit between work and family/relationships system and includes items related only to the work/achievement and the contact/relationships areas. These items are similar to the items of other work-family balance scales (e.g., Hill et al., 2001; Grzywacz & Bass, 2003). Based on the definition of life balance, items regarding each of the four life areas were created, analyzed in two preliminary studies, selected and finally added to the items of the WLB-6. The LBQ consists of 20 items. An example item from the work/achievement area is: “Because of my work, I have no free time” (R); an example item from the contact/relationships area: “I have enough time for my friends”; an example item from the body/health area: “I get enough sleep”; and, finally, an example item from the life meaningfulness area is: “Recently I couldn’t stop and think about myself” (R). Participants answer all items using a 6-point Likert-type scale from *completely disagree* (1) to *completely agree* (6). The reverse items (R) must be rescored before analysis. Subscale scores are obtained by adding the ratings for the relevant items. A total score is calculated by adding up the ratings across all answers. A high total score indicates the sufficiency of time available for the life areas.



A comparison of items reveals that the LBQ assesses an aspect of life balance which differs from the LBC. The Life-Balance Questionnaire does not focus on the appropriateness of time spent across life areas. Instead, subjective sufficiency of time is assessed. I hypothesized that the behavioral measure of time spent is related to the perceived sufficiency of available time across important life areas. A person who is able to balance his or her life spending appropriate time for each of the life areas should also perceive sufficiency of available time for the life areas. On the other hand, this need not be a rule. For example, somebody may spend appropriate time in his work, but, because of increased responsibilities, he still perceives the time available for his work as insufficient. Thus, perceived sufficiency of time is an important additional aspect of life balance.

#### *Internal and external validity testing*

For internal validity testing, I applied both classical test theory (Cronbach's alpha, explorative factor analysis) as well as the item-response theory (Mokken's scaling, Lovinger's coefficient of scalability). External validity was tested by performing predictor-criterion analyses. Based on the findings of work-family balance research, significant relationships between life balance measures on the one hand, and well-being, stress and health scales on the other hand are expected. Further, I tested the expected relationship between the two life balance measures in an effort to examine their convergent validity. In addition, a structural model investigating the impact of life balance on well-being was tested.

## Method

### *Participants*

The total sample consists of 136 students who participated in two separate studies. In the first sample ( $N = 63$ ), there were 43 female and 20 male participants. The mean age was 24.8 year ( $SD = 5.2$ ). The second sample ( $N = 73$ ) consisted of 51 women and 22 men, with a mean age of 24.5 year ( $SD = 4.4$ ). There were no significant differences in gender ( $\chi^2 = 0.41$ ,  $df = 1$ ,  $p = .84$ ), age ( $t = 0.42$ ,  $df = 134$ ,  $p = .68$ ), the Life-Balance Checklist scores ( $F = 0.42$ ,  $df = 134$ ,  $p = .53$ ) or the Life-Balance Questionnaire scores ( $F = .99$ ,  $df = 134$ ,  $p = .30$ ) between these two samples. Similarly, there were no differences in any of LBC subscales or LBQ subscales between the two samples.

### *Measurements*

Apart from the life balance measurements presented above, participants completed the questionnaires assessing well-being, satisfaction with relationships, life satisfaction, sense of coherence, temperament, perceived stress, health problems and symptoms.

*Emotional well-being:* To assess emotional well-being, participants filled out a Mood Adjective Checklist (*BEF*; Kuhl & Kazén, in prep.), which is an extended version of the PANAS scale (Watson, Tellegen, & Clark, 1988). Since the PANAS items are restricted to arousal and activation, the BEF scale contains items related to positive and negative mood as additional indicators of emotional well-being. Positive mood was assessed with nine adjectives (e.g., happy, active, pleased, joyful), negative mood with 12 adjectives (e.g., helpless, nervous, annoyed, tense, irritable). Participants indicated the extent to which they feel these moods in their everyday life (“In general I feel ...”) using a 4-point Likert-type scale from *not at all* (0) to *very frequently* (3). As assessed by coefficient alpha, the reliability of the two mood scales were  $\alpha = .77$  for positive mood and  $\alpha = .80$  for negative mood.

*General well-being:* The WHO 5-item Well-Being Index (*WHO-5*) was used to give a measure of general well-being (e.g., “Over the last two weeks I have felt cheerful and in good spirits.”). I used a German translation of the scale which represented the official translation by the WHO. Participants answered the five items using a 6-point Likert-type scale from *at no time* (0) to *all of the time* (5). A sum score is calculated by adding up the figures of the five answers. A high sum score indicates a status of optimal well-being. The WHO-5 has a good validity (Bonsignore et al., 2001) and sufficient internal consistency (Cronbach’s  $\alpha = .85$  in this sample).

*Life satisfaction:* The Satisfaction with Life Scale (*SWLS*; Diener, Emmons, Larsen, & Griffin, 1985) was administered to assess life satisfaction. I used the German translation from Jörg Schumacher (see e.g. Sölva et al., 1995; Lettner et al., 1996). The SWLS is a five-item, self-report scale where subjects rate their level of agreement with each item (e.g. „In most ways my life is close to ideal“ and „So far I have got the things I want in life“) on a seven-point Likert scale. A score is obtained by adding the rating for all items. High scores represent high life satisfaction. The results of studies evaluating the measurement indicate that the SWLS has good reliability and internal consistency (Pavot & Diener, 1993). In the present study, internal consistence was  $\alpha = .83$ .

*Satisfaction with relationships:* Satisfaction with relationships was measured using the Satisfaction with Relationship Subscale adopted from the Well-Being and Health Ques-

tionnaire (*BESK*; Kuhl, 1999a). An example item on this scale is: “I am satisfied with my relationships to other people”. Participants answered the questions on the 7-point Likert scale from *not at all* (0) to *extremely* (6). Cronbachs’ Alpha of this scale was .84. High scores represent high satisfaction.

*Sense of coherence*: To measure sense of coherence, I used the German short version (Schumacher et al., 2000) of the Sense of Coherence Scale developed by Antonovsky (1987). This short version (*SOC-9*) contains nine items that are rated on a scale from 1 (strongly disagree) to 7 (strongly agree). Sense of coherence entails a feeling of confidence that the world is predictable, meaningful, and structured, as well as a feeling that challenges are within the person’s ability to resolve. Sample item from the SOC is “There is always a solution to the painful things in life”. As assessed by coefficient alpha, the inner consistency of the scale was .86.

*Stress*: Stress was measured by using two self-report scales. First, the Perceived Stress Scale (*PSS*; Cohen, Kamarck, & Mermelstein, 1983) was used as a global measure of stress (e.g., “In the last month, how often have you been upset because of something that happened to you unexpectedly?”). It consists of 14 items rated from 0 to 4. Participants were asked about their feelings in the preceding 4 weeks. High scores reflect high global stress levels. The PSS yields good test–retest reliability ( $r = 0.70$ ; O’Connor & O’Connor, 2003), and it has adequate predictive validity (Hewitt, Flett, & Mosher, 1992; Cohen & Williamson, 1988). Good internal consistency was demonstrated in this sample (Cronbach’s  $\alpha = .83$ ). Second, the Life-Stress Scale adopted from the Volitional Components Inventory (*VCI*; Kuhl & Fuhrmann, 1998) was administered with the two subscales (demands and threats) consisting of four items each. Example items from the demands scale are: “My current life circumstances are very tough”, and “I must cope with a lot of difficulties”. Example items from the threats scale are: “I have many painful experiences to cope with”, and “I have felt a lot of conflicts and hostility between myself and others lately”. These two types of stressors load on orthogonal factors and show the theoretically expected correlations with low positive affect (the demands scale) and high negative affect for the threats scale (cf. Kuhl, 2001, p.243). Participants responded to each item using a 4-point Likert-type scale from *completely disagree* (0) to *completely agree* (3). In the present study, internal consistence were  $\alpha = .80$  for demands and  $\alpha = .89$  for threats.

*Health problems and symptoms*: To assess health problems and symptoms I used two measurements. First, a short 32-item version of the Symptom Checklist (*SCL-90-R*; Derogatis, 1994) was administered. I used the German version form Franke (2002) that has

been validated in Germany (e.g., Schmitz et al., 2000). Symptoms regarding nine primary symptom dimensions (i.e., somatization, obsessive-compulsions, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) were rated on a 5-point Likert scale, with values ranging from *not at all* (0) to *extremely* (4) rating degree of distress experienced due to each symptom over the past seven days. The General Severity Index (GSI), which is the global total score, was computed from the grand total sum of the individual items. In this sample, internal consistence were  $\alpha = .89$ . Second, the participants filled out the Health Problems Subscale adopted from the Well-Being and Health Questionnaire (*BESK*; Kuhl, 1999a). An example item from this scale is: “I often have somatic complaints (e.g., headaches, backache, stomach ache)”. Participants answered the questions on the 7-point Likert scale ranging from *not at all* (0) to *extremely* (6). Cronbachs’ Alpha of this scale was .71. High score represents frequent health problems in either scale.

*Temperament:* The NEO Five-Factor Inventory (*NEO-FFI*; Costa & McCrae, 1991) translated by Borkenau and Ostendorf (1993) was used to assess extraversion and neuroticism. Participants responded using the 5-point Likert scale format ranging from *strongly disagree* (1) to *strongly agree* (5). Example item on the extraversion scale is: “I very much like to work surrounded by people”. Example item on the neuroticism scale is: “I feel inferior to the majority of my colleagues”. As assessed by coefficient alpha, internal consistency for extraversion and neuroticism were .76, and .79, respectively.

## Statistical Analysis

### *Assessment of the internal validity*

The assessment of internal consistency and validity of the life balance scales was performed by calculation of Cronbach's coefficient alpha, factor loadings, Loevinger’s coefficient of scalability and Mokken’s coefficient of homogeneity. Cronbach's alpha, a commonly used indicator of the internal consistency of a scale, estimates how well a set of items measures a single unidimensional latent construct. It can be written as a function of the number of test items and the average inter-correlation among items. Specifically, if the inter-item correlations are high, then there is evidence that the items are measuring the same underlying construct. On the other hand, having multi-dimensional data, Cronbach's alpha will generally be low for all items. However, if an alpha is very high ( $> 0.9$ ) it may suggest a high level of item redundancy. Thus, it should be within the range 0.7 – 0.9. (Pospeschill, 2000; Streiner & Norman, 1995).

Further, I conducted a factor analysis to identify the item structure. As noted in the life balance theory (Seiwert, 2001), the life areas are thought to be connected to each other. Therefore, I used the Oblimin method of factor rotation (oblique rotation) allowing for intercorrelation of extracted factors.

Finally, I calculated Loevinger's coefficient and Mokken's coefficient of homogeneity. Mokken's scaling is a nonparametric version of Guttman scaling, and is used for the unidimensional measurement of latent variables (van Schuur, 2003). Classical measurement models such as reliability or factor analysis assume that all items are equally "popular" (i.e., they have the same frequency distribution). Whenever this assumption is violated, an artifact can creep in whereby items do not seem to be homogeneous enough to measure a single latent variable. The advantage of Mokken scale analysis (Mokken, 1971) is that in introducing model parameters for items, it explicitly takes into account that the items differ in popularity (van Schuur, 2003). The Mokken coefficient ( $H_i$ ) is calculated for each individual item and indicates to which extent the respective item lies on the same dimension as the other items (i.e., fit into the expected subscale). I have used the procedure for the analysis of polychotomous items (Debets & Brouwer, 1989). A coefficient of 0.3 to 0.39 is regarded as acceptable, and a coefficient of 0.4 or more indicates an item that is adequately included in a scale. Loevinger's coefficient ( $H$ ) is a measure of scalability for the whole scale as it indicates to which extent the items represent just one dimension (Loevinger, 1948). For the classification of scales on the basis of coefficients, Mokken suggests the following system:  $H \geq 0.5$  indicates a strong scale;  $0.4 \leq H < 0.5$  a medium scale,  $0.3 \leq H < 0.4$  a weak scale (Mokken, 1982).

#### *Assessment of external validity*

The ability of the life balance measures to examine the extent of balanced or unbalanced life areas was estimated by performing predictor-criterion analyses (concurrent validity). The validity was tested in three steps. First, I examined the relations between individual subscales of the life balance instruments and relevant external variables which are assumed to be correlated (e.g., appropriateness of time spent in health-related activities compared with frequency of health problems). The following variables were supposed to be indirectly related to individual subscales: (1) low level of perceived stress and high level of satisfaction with relationships as criteria for appropriateness of time spent in work-related activities (LBC) or adequate time for this domain (LBQ); (2) high level of satisfaction with relationships as a criterion for appropriate allocation of time spent in the area

related to social contact; (3) low level of health problems as a criterion for the subscale “health/body”; and (4) high level of sense of coherence as a predictor for the subscale “life meaningfulness”. All variables were expected to correlate with the relevant life balance subscales to some extent. However, they measure different aspects of life or different characteristics. Therefore these correlations were expected to be significant, but moderate. Second, based on previous findings (see *Empirical Background*), the total life balance score was compared with the following variables that are assumed to be related to life balance: well-being, perceived stress, and health problems. Similarly as noted before, these correlations were expected to be significant but not too high. Third, I correlated the two life balance measurements with each other. Although each life balance scale measures a different aspect of life balance, either scale should be related to the same overarching construct. Therefore, I expected this correlation to be significant, but moderate.

### The Life-Balance Checklist (LBC) – Results and Discussion

#### *Cronbach’s Alpha and Factor Analysis*

The original 10-point-scale was used for item and factor analysis as well as for Mokken’s scale analysis. Item-specific information concerning means and item-scale correlation are listed in Table 1.1. This table also contains coefficient Alpha for subscales and oblimin-rotated factor loadings of individual items. As confirmed by Kaiser-Meyer-Olkin Measure of Sampling Adequacy ( $KMO = .72$ ) and Barlett’s Test of Sphericity ( $\chi^2 = 1006.44$ ,  $df = 153$ ,  $p < .001$ ), the data were adequate to be factor analyzed. Four factors with an eigenvalue greater than 1 were extracted that correspond to the four subscales (life areas) of the Life-Balance Checklist (see Table 1.1). These four factors account for 61.45% of the covariance among the variables.

In agreement with my expectations, identified factors corresponded to the main items of the life areas. The internal consistency estimates obtained for the Life-Balance Checklist ( $\alpha = .75$ ) as well as for its subscales ( $\alpha_s > .71$ ) satisfied traditional standards.

Table 1.1

Means, item-subscale correlations ( $r_{it}$ ), factor loadings on four factor extracted (F1, F2, F3, F4), and communality (Com) for each of the 18 LBC-items. The last column contains Cronbach's Alpha coefficient ( $\alpha$ ) of the four subscales. Reliability of the whole scale (LBC) was .75.

Subscale/Item	Item Statistics		Factor Analysis					Reliability	
	Mean	$r_{it}$	F1	F2	F3	F4	Com	$\alpha$	
<i>Social contact</i>								<i>.81</i>	
Meeting friends	5.01	.71	.84	-.06	.10	.21	.73		
Maintaining friendships	5.28	.67	.81	.07	.07	.22	.65		
Seeing friends/acquaintances	4.61	.62	.79	.08	.11	.17	.63		
Making new contacts	4.64	.57	.74	.22	.19	-.06	.63		
Family (partner, parents ...)	5.08	.44	.58	.12	.05	.28	.36		
<i>Work/Achievement</i>								<i>.80</i>	
Work success	4.99	.70	.11	.82	-.08	-.08	.68		
Your career	5.04	.64	.07	.79	-.21	-.11	.65		
Achieving goals	5.73	.59	.16	.78	.13	.20	.69		
Work	5.68	.51	.03	.66	-.04	-.34	.54		
<i>Life meaningfulness</i>								<i>.79</i>	
Thinking about your self	5.93	.75	.19	-.17	.90	.17	.83		
Specifying your own values	5.48	.63	.17	.18	.80	.18	.70		
Thinking about your own life	5.43	.56	.09	-.21	.75	.08	.59		
Dealing with questions concerning the future	5.90	.45	.16	.46	.59	.10	.60		
<i>Body/Health</i>								<i>.71</i>	
Recreation	4.32	.63	.12	-.19	.21	.81	.70		
Relaxation	4.69	.57	.17	-.29	.36	.77	.72		
Eating healthy	4.51	.42	.28	.32	-.06	.65	.56		
Sleeping	5.25	.41	.15	-.20	.21	.58	.39		
Fitness/Sport	3.49	.28	.24	.27	-.24	.49	.42		

### *Mokken's Scale Analysis*

The internal validity of the Life-Balance Checklist was adequate, as indicated by Mokken coefficients (see Table 1.2). The coefficients of all items were all above 0.3 (mostly above 0.4) and fitted to the relevant subscales. According to Loevinger's coefficient of scale homogeneity, two subscales were identified as medium scales (social contact, body/health) and two subscales could be judged as strong scales (work/achievement, life

meaningfulness). The results of Mokken scaling confirm the adequacy of item structure identified with factor analysis before, and support the scalability of the subscales. Taken together, the LBC was found to have an adequate internal validity.

Table 1.2

*Loevinger's coefficient of scale homogeneity and Mokken scores for individual items of the Life-Balance Checklist.*

Subscale/Item	Mokken score (Item H)	Loevinger's coefficient of homogeneity (Scale H)
<i>Social contact</i>		<i>0.48</i>
Meeting friends	0.55	
Maintaining friendships	0.52	
Seeing friends/acquaintances	0.50	
Making new contacts	0.46	
Family (partner, parents ...)	0.37	
<i>Work/Achievement</i>		<i>0.51</i>
Work success	0.57	
Your career	0.53	
Achieving goals	0.50	
Work	0.44	
<i>Life meaningfulness</i>		<i>0.50</i>
Thinking about your self	0.59	
Specifying your own values	0.52	
Thinking about your own life	0.48	
Dealing with questions concerning the future	0.40	
<i>Body/Health</i>		<i>0.43</i>
Recreation	0.53	
Relaxation	0.50	
Eating healthy	0.36	
Sleeping	0.38	
Fitness/Sport	0.38	

### *External Validity*

As a first step of predictor-criterion analysis, I computed the correlation coefficients of the LBC subscales and relevant external variables. Before creating the scores of each



subscale, the items were rescored according to procedure described above (see section: “The Life-Balance Checklist”). It is to say that a high sum score indicates the appropriateness of time spent. As shown in Table 1.3, I found the expected relationships of the LBC subscales with external variables that were assumed to be associated with these subscales.

Table 1.3

*Correlations of the LBC total score and the LBC subscales with relevant external variables.*

*Coefficients testing the adequacy of the LBC subscales are displayed in italics. Only significant correlations are shown.*

	Perceived stress scale	Life-stress scale	Satisfaction with relationships	Health problems	GSI	SOC	Extr.	Neur.
LBC (total score)	-.37**	-.40**	.31**	-.38**	-.43**	.22*		-.27*
Work/Achievement	-.28*	-.42**	.42**		-.21*	.25*	.33**	
Social contact		-.27*	.28*	-.21*	-.26*		.27*	
Health/Body	-.29*	-.22*		-.35**	-.35**			
Life meaningfulness	-.42**	-.32**		-.39**	-.43**	.30**		-.41**

*Note.* GSI – Global Severity Index; SOC – Sense of Coherence; Extr. – Extraversion; Neur. – Neuroticism. \* $p < .05$ , \*\* $p < .01$

Appropriateness of time spent in work correlated positively with satisfaction with relationships, and negatively with stress. The positive relationship with the satisfaction with relationship scale was expected because inappropriate long hours spent in work have been found to have a negative impact on the quality of social relationships (Kofodimos, 1990). Spending appropriate time for social contact was associated with satisfaction with relationships. Both domains, work and social contact, were also related to extraversion, which indicates, that extraverted persons spend appropriate amount of time in either domain. Further, appropriateness of time spent in health-related activities was negatively related to subjective health problems as indicated by somatic complaints, and to the general severity index. In other words, spending inadequate time for health and own body could lead to somatic and psychological problems and illnesses. Finally, the fourth life area which is related to meaningfulness of life correlated positively with Antonovsky’s sense of coherence<sup>\*</sup>. This finding is consistent with the hypothesis, that people who perceive the

<sup>\*</sup> Because of using the short 9-items version of the Sense of Coherence Scale which is one-factorial, it was not adequate to compute the partial score of dimension called „meaningfulness“. Therefore we worked with the total score of the scale.

world or their lives as comprehensible, manageable and meaningful spend appropriate amount of time thinking about their life and themselves, specifying their own values and reflecting upon their future expectations. Reflecting about oneself can be related to neuroticism. However, this case does not apply to my measurement. Neuroticism correlated negatively with reflections on the meaningfulness of life (see Table 1.3). This relationship indicates that the LBC identifies people who perceive their lives as meaningful. Taken together, the results of the first step support the validity of LBC subscales. As expected, each subscale showed the assumed relationship to its relevant external variable.

However, dealing with life balance requires an understanding as to how life areas are balanced among each other. Partial scores of the LBC subscales indicate the appropriateness of time spent in each life area, but not the appropriateness as a whole. Table 1.4 presents the intercorrelation for the four subscales of the Life-Balance Checklist. These findings support the theoretical assumption (Seiwert 2000, 2001) that the four main life areas are not independent but interconnected. Therefore, it is useful to work with the total score of the LBC.

Table 1.4

*Intercorrelations for the four subscales of the Life-Balance Checklist. \* $p < .05$ , \*\* $p < .01$*

	Social contact	Body/Health	Life meaningfulness
Work/Achievement	.40**	.11	.34**
Social contact	-	.30**	.42**
Body/Health		-	.19*

As a second step of testing concurrent validity, I examined the relationships between the LBC total score and variables that are indirectly related to life balance. As can be seen in Table 1.3, total score of the Life-Balance Checklist correlated negatively with scores of both stress scales, with scores of both symptom scales, and positively with the Sense of Coherence Scale and the Satisfaction with Relationships Scale. In addition, the LBC total score correlated positively with measures of well-being (see Table 1.5). These correlations suffice to assume a reasonable concurrent validity of the Life-Balance Checklist. Higher correlations could not be expected because the concurrently used scales do not assess life balance, but various personality variables that are assumed to be related to life balance (e.g., Hill et al., 2001; Kofodimos, 1990; Seiwert, 2000, 2001).

Table 1.5

*Correlations of the Life-Balance Checklist with well-being measures. \* $p < .05$ , \*\* $p < .01$*

	Positive mood	Negative mood	Emotional well-being	General well-being	Life satisfaction
LBC (total score)	.26*	-.33**	.36**	.38**	.29*

*Note.* Emotional well-being was created by standardizing the positive and negative mood, then subtracting negative mood from positive mood.

## The Life-Balance Questionnaire (LBQ) – Results and Discussion

### *Cronbach's Alpha and Factor Analysis*

Table 1.6 shows means, item-scale correlation, factor loadings and communalities of the Life-Balance Questionnaire items, and coefficients of internal consistency of the LBQ subscales. As assessed by coefficient alpha, the internal consistency of the LBQ ( $\alpha = .87$ ) as well as of its subscales ( $\alpha_s > .76$ ) was sufficient.

According to Kaiser-Meyer-Olkin Measure of Sampling Adequacy ( $KMO = .79$ ) and Barlett's Test of Sphericity ( $\chi^2 = 1290.45$ ,  $df = 190$ ,  $p < .001$ ), the data were adequate to be factor analyzed. Five factors with an eigenvalue greater than 1 were extracted that correspond to the four subscales (life areas) of the Life-Balance Questionnaire (see Table 1.6). These five factors account for 66.02% of the covariance among the variables. Several items have relatively high loading on more than one factor ( $>.35$ ). This fact reflects the assumption that the features of life areas are not independent from each other and support my use of oblimin-rotation solution. The fourth item (“Because of my work, I neglect my family or friends”) loaded highly on two subscales – the “work/achievement” subscale and the “contact” subscale. Therefore, I use the same item by computing partial scores of both subscales. Despite the high loadings of some items on more than one factor, the items showed the expected structure. The last two factors (F4 and F5) were both found to correspond to the body/health area. I decided to put the items of these both factors into one scale (the body/health subscale). Using Mokken's scale analysis, I will test the adequacy of this decision in the next section.

Table 1.6

Means, item-subscale correlations ( $r_{it}$ ), factor loadings on five factor extracted (F1, F2, F3, F4, F5), and communality (Com) for each of the 21 LBQ-items. Item with (R) were rescored. The last column contains Cronbach's Alpha coefficient ( $\alpha$ ) of the four subscales. Reliability of the whole scale (LBQ) was .87. \* The item belongs to two subscales

Subscale/Item	Item Statistics		Factor Analysis					Reliability	
	Mean	$r_{it}$	F1	F2	F3	F4	F5	Com	$\alpha$
<i>Life meaningfulness</i>									.83
I have enough time for thinking about the meaning of my life	3.94	.75	.88	.22	-.11	.02	-.26	.78	
I give myself enough time for thinking about my life	3.86	.68	.84	.23	-.05	.02	-.37	.75	
Recently I couldn't stop and think about myself (R)	4.33	.66	.76	.19	-.31	.11	-.43	.64	
Life goes so quickly that I have no time to think about its meaning (R)	4.61	.57	.72	.14	-.33	.32	-.16	.61	
<i>Social contact</i>									.82
I have enough time for my friends	4.01	.72	.26	.85	-.20	.15	-.26	.74	
I have too little time to care about my family/friends (R)	4.22	.68	.21	.80	-.26	.12	-.04	.66	
I often visit my friends and acquaintances	4.17	.55	.09	.80	-.03	.04	-.10	.68	
Because of my work, I neglect my relationships* (R)	4.41	.61	.34	.63	-.60	.28	-.13	.67	
I have enough time for my family (partner, parents, children ...)	4.02	.58	.42	.63	-.39	.30	-.04	.58	
I have too little time for speaking to my friends (R)	4.41	.40	.29	.47	-.29	.27	-.35	.35	
<i>Work/Achievement</i>									.80
I work more than others (R)	4.16	.66	.18	.16	-.86	.07	-.20	.74	
I spend more time working than other people (R)	4.01	.75	.30	.32	-.84	.09	-.23	.74	
In my free time I still deal with my work duties (R)	3.56	.42	.09	.07	-.66	-.06	-.07	.45	
Because of my work, I neglect my relationships* (R)	4.41	.56	.34	.63	-.60	.28	-.13	.67	
Because of my work, I have no free time (R)	4.40	.52	.52	.46	-.54	.18	-.25	.53	
<i>Body/Health</i>									.76
I work out enough to stay fit (e.g., jogging, sport...)	3.11	.40	.10	.27	.15	.75	-.14	.66	
Recently I haven't eaten regularly (R)	3.89	.46	.08	-.03	-.23	.75	-.28	.63	
I don't take care enough about my health (R)	3.75	.49	.21	.19	.00	.74	-.26	.58	
I get enough sleep	4.14	.60	.29	.15	-.14	.24	-.94	.89	
I have too little time to sleep (R)	4.19	.57	.38	.16	-.32	.27	-.86	.79	
I have enough time to relax	3.86	.49	.51	.40	-.19	.20	-.62	.64	

### Mokken's Scale Analysis

The internal validity of the Life-Balance Questionnaire was adequate, as indicated by Mokken coefficients (see Table 1.7). The coefficients of all items were all above 0.3

(mostly above 0.4) and fitted to the relevant subscales. According to Loevinger's coefficient of scale homogeneity, the "life meaningfulness" subscale was identified as a strong scale. The remaining three subscales were identified as medium scales (work/achievement, social contact, body/health). Testing the adequacy of the "body/health" subscale (as noted in the last section), I found all items to be acceptable for this subscale. Thus, combining the last two factors (see Table 1.6) seems to be justified.

Table 1.7

*Loevinger's coefficient of scale homogeneity and Mokken scores for individual items of the Life-Balance Questionnaire. \* The item belongs to two subscales*

Subscale/Item	Mokken score (Item H)	Loevinger's coefficient of homogeneity (Scale H)
<i>Life meaningfulness</i>		<i>.60</i>
I have enough time for thinking about the meaning of my life	0.66	
I give myself enough time for thinking about my life	0.61	
Recently I couldn't stop and think about myself (R)	0.61	
Life goes so quickly that I have no time to think about its meaning (R)	0.52	
<i>Social contact</i>		<i>.45</i>
I have enough time for my friends	0.55	
I have too little time to care about my family/friends (R)	0.52	
I often visit my friends and acquaintances	0.42	
Because of my work, I neglect my relationships* (R)	0.48	
I have enough time for my family (partner, parents, children ...)	0.43	
I have too little time for speaking to my friends (R)	0.32	
<i>Work/Achievement</i>		<i>.47</i>
I work more than others (R)	0.53	
I spend more time working than other people (R)	0.57	
In my free time I still deal with my work duties (R)	0.35	
Because of my work, I neglect my relationships* (R)	0.46	
Because of my work, I have no free time (R)	0.40	
<i>Body/Health</i>		<i>.41</i>
I work out enough to stay fit (e.g., jogging, sport...)	0.39	
Recently I haven't eaten regularly (R)	0.39	
I don't take care enough about my health (R)	0.32	
I get enough sleep	0.45	
I have too little time to sleep (R)	0.44	
I have enough time to relax	0.43	

The results of Mokken scaling confirm the adequacy of item structure identified with factor analysis before, and support the scalability of the subscales. Taken together, the LBQ was found to have an adequate internal validity.

*External Validity*

As a first step, I computed the correlation coefficients of the LBQ subscales and relevant external variables. A high sum score of each subscale indicates a sufficient amount of time available for the relevant life area. As shown in Table 1.8, I mostly found the expected relationships of the LBQ subscales with external variables that were assumed to be associated with these subscales. Having sufficient time for one's work correlated positively with satisfaction with relationships. The correlation with stress was not significant, but it was in the expected direction. Having enough time for social contact was associated with satisfaction with relationships as well as with extraversion. Further, sufficient amount of time for health care was negatively related to stress, health problems and general severity index. In other words, having insufficient time for health and body care was found to be related to stress, somatic problems and illness. Finally, meaningfulness of life correlated positively with Antonovsky's sense of coherence, and negatively with stress and health problems. People who perceive the world or their lives as comprehensible, manageable and meaningful have sufficient time to think about their lives and themselves. Besides, the subscale "life meaningfulness" correlated negatively with neuroticism (see Table 1.8) which indicates that having sufficient time for thinking about oneself is not necessarily a sign of neuroticism. Taken together, the results of the first step support the validity of the LBQ subscales. As expected, the subscales showed assumed relationships to their relevant external variables.

Table 1.8

*Correlations of the LBQ total score and the LBQ subscales with relevant external variables.*

*Coefficients testing the adequacy of the LBQ subscales are displayed in italics. Only adequate or significant correlations are shown.*

	Perceived stress scale	Life-stress scale	Satisfaction with relationships	Health problems	GSI	SOC	Extr.	Neur.
LBQ (total score)	-.42**	-.32**	.20+	-.24*	-.25*	.24*		-.25*
Work/Achievement	<i>-.11ns</i>	<i>-.17ns</i>	.23*					
Social contact		-.28*	.35**				.30**	
Health/Body	-.42**	-.27*		-.43**	-.40**			
Life meaningfulness	-.43**	-.23*		-.24*	-.25**	.35**		-.34**

*Note.* GSI – Global Severity Index; SOC – Sense of Coherence; Extr. – Extraversion; Neur. – Neuroticism. +p < .10, \*p < .05, \*\*p < .01

In order to test the assumption that the four life areas are not independent but interconnected (Seiwert 2000, 2001), I correlated the four LBQ subscales among each other. As shown in Table 1.9, the LBQ subscales were strongly related to each other. These results support the assumption indicating an expected between-subscales structure of the Life-Balance Questionnaire.

Table 1.9

*Intercorrelations for the four subscales of the Life-Balance Questionnaire. \* $p < .05$ , \*\* $p < .01$*

	Social contact	Body/Health	Life meaningfulness
Work/Achievement	.58**	.30**	.36**
Social contact	-	.37**	.35**
Body/Health		-	.43**

As a second step of concurrent validity testing, the relationships between the LBQ total score and variables that are indirectly related to life balance were examined. The LBQ total score was computed by summing up the scores across individual items. High scores indicate sufficient amount of time in each life area. As presented in Table 1.8, the LBQ total score correlated negatively with scores of both stress scales, with scores of both symptom scales, and positively with the Sense of Coherence Scale and the Satisfaction with Relationships Scale. Further, the LBQ total score correlated positively with the measurements of well-being (see Table 1.10). These correlations are sufficiently high to assume a reasonable concurrent validity of the Life-Balance Questionnaire. Stronger correlations could not be expected because the concurrently used scales do not assess life balance per se, but measure independent personality variables that are assumed to be related to life balance (e.g., Hill et al., 2001; Kofodimos, 1990; Seiwert, 2000, 2001).

Table 1.10

*Correlations of the Life-Balance Questionnaire with well-being measures. \* $p < .05$ , \*\* $p < .01$*

	Positive mood	Negative mood	Emotional well-being	General well-being	Life satisfaction
LBQ (total score)	.26*	-.33**	.35**	.33**	.25*

*Note.* Emotional well-being was created by standardizing the positive and negative mood, then subtracting negative mood from positive mood.

## The LBC versus the LBQ – Results and Discussion

As a third step of external validity testing, I examined the correlation between the two measures of life balance (see Table 1.11). In concordance with expectation, the two measures were significantly related to each other. Moreover, analogous subscales (e.g., the work/achievement subscale from the LBC and the work/achievement subscale from the LBQ) correlated significantly as well. Although these coefficients are significant, they are not very high. This finding supports the suggestion that the two life balance scales measure similar, but not identical aspects of life balance.

Table 1.11

*Correlations of the LBC with the LBQ. Coefficients of total scores and of relevant subscales are displayed in italics. Only significant correlations are shown. \* $p < .05$ , \*\* $p < .01$*

The Life-Balance Questionnaire	The Life-Balance Checklist				
	LBC (total score)	Work/Achiev.	Social contact	Body/Health	Life meaning.
The LBQ (total score)	<i>.40**</i>	<i>.27**</i>	<i>.29**</i>	<i>.37**</i>	<i>.29**</i>
Work/Achievement	<i>.20*</i>	<i>.20*</i>	<i>.20*</i>		
Social contact	<i>.33**</i>	<i>.27**</i>	<i>.37**</i>	<i>.20*</i>	<i>.24*</i>
Body/Health	<i>.40**</i>	<i>.22*</i>		<i>.56**</i>	<i>.20*</i>
Life meaningfulness	<i>.20*</i>			<i>.20*</i>	<i>.24*</i>

In addition, the impact of both aspects of life balance on well-being was tested by using a structural equation model (see Figure 1.1). Previous research revealed strong evidence of the impact of work-family balance on well-being (Arye, 1992; Fisher, 2002; Grant-Vallone & Donaldson, 2001; Greenhaus et al., 2003; Noor, 2004; Rice et al., 1992). In my model, I investigated life balance as a latent construct composed of the appropriateness of spent time and the sufficiency of available time – the two aspects of life balance measured with the life balance scales. Well-being was similarly investigated as a latent construct composed of emotional well-being (BEF), general well-being (WHO-5), and life satisfaction (SWLS). I used AMOS-5 (Arbuckle & Wothke, 1999; Arbuckle, 2003) for testing my model. To evaluate the overall fit of the model, I examined the chi-square statistic as well as the goodness-of-fit index (GFI), the normed fit index (NFI), the comparative fit index (CFI), the standardized root mean square residual (sRMR), and the root mean square of approximation (RMSEA). According to Homburg and Baumgartner (1995), the



chi-square statistic should not be significant. Values of the fit indexes GFI, NFI and CFI close to 1 indicate a very good fit of a model and should not be less than 0.9, as noted in the AMOS manual (Arbuckle & Wothke, 1999). In contrast, RMSEA and sRMR should be low; Zero indicates a perfect fit. According to Browne and Cudeck (1993), a value of about 0.08 or less for the RMSEA indicates a reasonable error of approximation. Respecting these conventional criteria, the model fitted the data:  $\chi^2(4, N = 136) = 2.07, p = .72$ ; GFI = .99, NFI = .96, CFI = 1.00; sRMR = .03, RMSEA = 0.00. As shown in Figure 1.1, I found a highly significant effect of life balance on well-being. This finding is in concordance with the previous ones reported in the work-family balance literature and thus supports the validity of the used life-balance scales. Besides, the finding suggests that it is useful to examine both discussed aspects of life balance when dealing with this area.

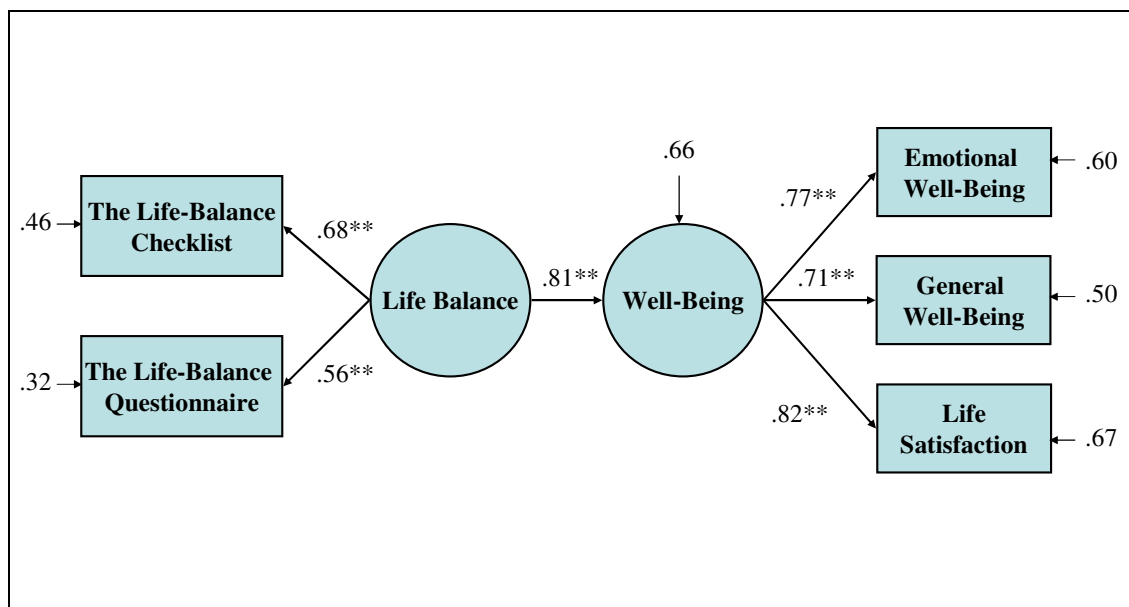


Figure 1.1 Structural model of the impact of life balance on well-being (standardized coefficients).

## General Discussion

The aim of the present study was to operationalize life balance and to test the internal and external validity of two constructed life balance measurements. Addressing Warren's (2004) suggestion that the work-life system is multi- and not just two dimensional, I examined life balance as a multidimensional construct. However, it is impossible to test all life domains in one paper. Therefore, based on Seiwert's (2000, 2001) theory, balance among the main life areas was investigated. Seiwert argues that, apart from work and family, the life domains that are often addressed in work-family balance research; there are

two other life domains – health and life meaningfulness – that are important in human life as well. The findings obtained from factor analysis supported the multidimensionality of life balance. I found four factors which reflected the major life domains. Testing the independency of extracted factors, I mostly observed the interrelations among them which confirms Seiwert's assumption that life areas are related to each other.

Life balance was operationalized from a temporal perspective. Time represents a basic resource (Bluenhorn & Denhardt, 1988; Britton & Tesser, 1991), or “space” of living (Seiwert, 2001). Balancing time provides a basis for fulfilling the responsibilities of various different roles. Thus, high appropriateness of time spent in each main life area indicates high balance achieved in one's life. Two instruments of life balance were constructed. In the Life-Balance Checklist, the appropriateness of the proportion of time spent in the most important life areas is assessed. The results provided support for internal and external validity of the Life-Balance Checklist: the internal consistency estimates obtained for the whole scale as well as for each subscale satisfied traditional standards. Using item-response theory, all coefficients were acceptable indicating that the items are adequately included in relevant subscales (Mokken's scaling) and represent one dimension (Lovingier's coefficient of scalability). Moreover, LBC subscales correlated with variables that were theoretically assumed to be affected from these subscales. Appropriateness of time spent in work correlated positively with satisfaction with relationships, and negatively with stress. Spending appropriate time in social contact was associated with satisfaction with relationships. Further, appropriateness of time spent for health care was negatively related to health problems and general severity index. Finally, spending appropriate time thinking about life and self, specifying own values and dealing with future expectations were positively associated with Antonovsky's sense of coherence. Overall, the total score of the Life-Balance Checklist representing the general appropriateness of time spent was associated with all external variables that were identified to be related to work-family balance in previous research. Previous findings regarding relations between work-family balance and well-being, stress and health were replicated using the Life-Balance Checklist (see e.g., Burke, 1988; Chapman et al., 1994; Frone, Russell, & Barnes, 1996; Frone et al., 1993; Googins, 1991; Grant-Vallone & Donaldson, 2001; Grzywacz & Bass, 2003; Rice, Frone, & McFarlin, 1992).

The second instrument, the Life-Balance Questionnaire, assesses the perceived sufficiency of time available for life areas. Reliability and validity of the LBQ turned out to be sufficient. All coefficients of internal consistency were higher than .70, mostly higher than

.80. In the factor structure, one item (“Because of my work, I neglect my family or friends”) loaded highly on two factors – work/achievement and contact/relationships. This item was originally a part of the 6-item Work-Life Balance Scale (Gröpel, 2004) which was one-dimensional, so the relation to both work and contact factors could be expected. Thus, I used the item by computing partial scores of both work/achievement and contact/relationships subscales. Further, the items related to the body/health area formed two dependent factors. However, according to theoretical assumptions, I decided to put these items together into one body/health subscale. Using Mokken’s scale analysis, the validity of this decision was confirmed. All Mokken’s coefficients were acceptable, this means, the items fitted well to this subscale. Concerning external validity, the findings were similar to those obtained for the LBC. Having sufficient time to think about life and self was found to be a characteristic of individuals who perceive the world or their lives as comprehensible, manageable and meaningful. A sufficient amount of time for health care was negatively related to stress, health problems and general severity index. In other words, having no time for health and body care was found to be related to stress, somatic complaints and illness. Further, having sufficient time for the work/achievement and the contact/relationships area correlated positively with the satisfaction with relationships. However, the work area did not significantly correlate with stress. A possible explanation is that the life stress does not affect the work area directly. Perhaps a more specified variable, such as work stress or work overload should be used for testing external validity of the work/achievement area in future research. The total score of the Life-Balance Questionnaire representing the perceived sufficiency of time for the most important life areas correlated with all external variables that were identified to be related to work-family balance in previous research. All correlations were sufficiently high supporting a reasonable validity of the LBQ.

Comparing the two measures, they were related to each other. As expected, spending appropriate time on life areas was associated with sufficient amount of time available for these life areas. However, it is not clear how these two aspects interact. On the one hand, perceived sufficiency of time can result from balanced time behavior. On the other hand, sufficient amount of time can facilitate appropriateness of time spent. Thus, this relationship may be bidirectional. More research is needed to specify this relationship.

Further, the findings suggest that the simultaneous effect of both appropriateness of time spent on the most important life areas and perceived sufficiency of time should also be examined. Testing life balance as a latent construct that was measured by the two life

balance measurements, a strong impact of life balance on well-being was found. This finding is consistent with findings of previous research on work-family balance (Frone et al., 1993; Googins, 1991; Grant-Vallone & Donaldson, 2001; Rice et al., 1992). Thus, in order to investigate life balance more precise, specific effects of the two life balance measures as well as their simultaneous effect should be examined in future research.

The present study has some limitations. The sample was relatively small and consists of students only. As noted by Galinsky, Bond, and Friedman (1996), work-family conflict, and the topic of life balance in generally, is not limited to parents. Students often have jobs in addition to their studies and some of them are also married or are already parents. Nonetheless, a sample of employees with traditional families should also be studied. In future research, employees having families as well as those studying or living alone should be included. Further, more external criteria should be examined.

To conclude, the present study provided support for the internal and external validity of the Life-Balance Checklist and the Life-Balance Questionnaires. Either scale measures a different aspect of life balance and can be used in future research.

PAPER 2      **Life Balance and Subjective Well-Being: The Mediating Role of Need Fulfillment**

*Abstract:* The relationship between life balance and well-being is well-documented. However, previous research failed to sufficiently explain why this relationship exists. The hypothesis was tested that a balanced distribution of time across various life domains increases well-being because it facilitates overall satisfaction of needs. The fulfillment of psychological needs was assessed negatively in terms of need frustration and positively by an index of need satisfaction. Three separate studies were performed. As expected, the life balance predicted the level of well-being in all studies. Moreover, the fulfillment of needs mediated this relationship. The results suggest that balancing time spent across various life domains predicts the level of well-being only if the individual's needs are fulfilled within that time.

## Life Balance and Subjective Well-Being: The Mediating Role of Need Fulfillment

The purpose of the present study was to examine and specify the relationship between life balance and well-being. Over the last years, the difficulties in balancing life demands have become the subject of significant discussion and research (Hobson, Delunas, & Kesic, 2001). Failure to achieve balance was associated with a variety of serious negative consequences including higher stress, health problems, family conflict and overall decrease in well-being and quality of life. However, previous research focused mostly only on two domains of life – work and family (e.g., Frone, Russell, & Cooper, 1992; Googins, 1991; Hill, Hawkins, Ferris, & Weitzman, 2001). Work-family balance and work-family conflict have been studied with the aim to identify their antecedents and consequences. Some authors argue that the work-life system is multi- and not just two-dimensional (Amundson, 2001; Seiwert, 2000, 2001; Warren, 2004). Warren (2004), for example, notes that over 170 different life domains have been identified in previous investigations. The major ones include domains of work, financial resources, leisure, dwelling and neighborhood, family, friendships, social participation and health. Seiwert (2000, 2001) distinguishes, apart from work and family, two additional life domains – health and meaningfulness of life – that are important in human life as well. According to his model, these four life domains represent the most important areas in life and reflect the multidimensionality of the work-life system. Balancing time spent across these areas can be assessed in terms of appropriate allocation of time and sufficient amount of time for each life area. The scarcity hypothesis (Chapman, Ingersoll-Dayton, & Neal, 1994) has provided a useful framework to understand the importance of time allocation when dealing with the balance in life. This hypothesis assumes a constant amount of time and energy individuals have at their disposal. Thus, an inappropriate allocation of time in one life area results in an increased likelihood of having insufficient time in other areas. This can have negative consequences for well-being and health. For example, spending too much time and energy for work could lead to health problems (e.g., somatic complaints, infarct, sleeping disorders), conflicts in the family (e.g., with one's partner), and also to dissatisfaction and alienation (the work doesn't provide personal meaning any longer). Loss of energy, reduced work motivation, and impaired work effectiveness may result. On the other hand, spending too little time and energy for work usually leads to problems at the workplace and loss of employment which could also impact other life areas (e.g., stress, depression, existential problems, family

problems, less self-actualization). Based on Seiwert's theoretical approach, life balance as the degree to which a person is able to spend appropriate time on each of the most important life areas – work/achievement, social contact/relationships, health/body, and meaningfulness of life – was operationalized (see Paper 1). This definition provides a useful starting point for life balance research.

In recent research on work and family balance, subjective well-being has been frequently studied. Subjective well-being (SWB) refers to how people evaluate their lives, and includes variables such as life satisfaction (cognitive component) and pleasant or unpleasant moods and emotions (affective component; Diener, Suh & Oishi, 1997). Failure to achieve balance was significantly associated with low levels of well-being and life satisfaction (Adams, King, & King, 1996; Arye, 1992; Grant-Vallone & Donaldson, 2001; Noor, 2004; Rice, Frone, & McFarlin, 1992). Conversely, work-family balance was positively related to well-being, life satisfaction and quality of life (Fisher, 2002; Greenhaus, Collins, & Shaw, 2003). Similarly, I found a positive relationship between life balance and well-being measures in Paper 1. However, previous research did not sufficiently explain why this relationship exists. Why does the appropriateness of time spent on life domains predict the level of well-being? Noor (2004) discusses the role salience as a variable which can moderate the effect of work-family conflict on well-being. According to this perspective, inappropriate allocation of time to work and family decreases the level of well-being when the roles related to work and family are more salient to the individual. However, the existing literature does not present a coherent picture of the direct or moderator effect of role salience. As discussed further by Noor (2004), some investigators (e.g., Luchetta, 1995; Martire, Stephens, & Townsend, 2000) obtained contradictory findings: role salience buffered the negative effect of work-family conflict on psychological distress. The results suggest that allocation of time plays a limited role only in predicting well-being. Furthermore, a deeper variable may be needed to explain the relationship between balanced time and well-being. Time allocation is an important circumstance, but not a psychological cause of well-being. Seiwert (2001) argues that it is not only important to allocate sufficient time across life areas but also to fill it with goal oriented behavior. Progress in goal related behavior leads to well-being. Emmons (1986) found successful goal striving to predict the level of well-being. Overall, goal attainment was positively associated with the level of well-being (Brunstein, 1993; Elliot, Sheldon, & Church, 1997; Martin & Tesser, 1996; Sheldon & Kasser, 1998). However, Sheldon and Kasser (1998) report a potentially significant moderator of this relationship. In their study, participants whose goals were not

self-integrated experienced little change in well-being, no matter how well they progressed in achieving their goals. Sheldon and Kasser further assume that this occurred because these goals do not satisfy important psychological needs. Recent findings by Brunstein (2001) confirmed this assumption, as did results reported by Baumann, Kaschel, and Kuhl (2004), and Gröpel (2003b). In these studies, congruence between goal orientations and implicit needs predicted the level of well-being. Thus, need satisfaction (need fulfillment) represents an important variable linked to well-being. Moreover, need satisfaction mediated the effect of goal attainment on well-being (Sheldon & Elliot, 1999) as well as the effect of job involvement on well-being (Riipinen, 1997). Accordingly, it is plausible to assume need satisfaction to play an important role in the relationship between life balance and well-being. First, spending appropriate amount of time across the most important life areas creates a “time window” for each area. Second, within this time, behavior is conducted. Finally, if this behavior is oriented toward the goals which satisfy one’s needs, well-being increases. Generally speaking, the appropriateness of time spent and the sufficiency of available time for each life area (i.e., life balance) may affect the level of well-being if the personal needs are fulfilled within that time. This logic leads to the general mediation hypothesis of the present study: Fulfillment of needs mediates the relationship between life balance and subjective well-being.

### Study 1

In the first study, I seek to replicate the finding that life balance predicts well-being. Moreover, I investigate frustration of needs as a reverse measure of need fulfillment. Three social needs have been studied extensively in motivation research: achievement, affiliation, and power (McClelland, 1985). Such needs or motives energize need-related goals and behavior. Previous research has shown that the passive component of needs, which is related to anxiety and frustration, can be assessed by self-report measures even when implicit motives are involved (Atkinson, 1958; Heckhausen, 1991; Kuhl, 2001). Therefore, I decided to use a self-report measure of need frustration to test the mediation hypothesis.



## Method

### Participants

Sixty-six students of the University of Osnabrück (45 women and 21 men) completed the questionnaires assessing life balance, need frustration and subjective well-being. Their mean age was 24.5 years (range 20 to 49 years).

### Measures

*Life balance.* Life balance was measured by using two self-report scales. First, the Life-Balance Checklist (*LBC*; see Paper 1) was administered to assess the appropriateness of time spent in the most important areas of life. Second, I used the Life-Balance Questionnaire (*LBQ*; see Paper 1) which assesses perceived sufficiency of time available for the four areas of life. Previous research supported adequate internal and external validity of the used life-balance instruments (see Paper 1).

*Need frustration.* The Need Frustration Scale adopted from the Motive Enactment Test (Kuhl, 1999b) was administered. It consists of 12 items regarded three basic social needs (achievement, affiliation, and power). Example items are: “If somebody doesn’t like me, I cannot stop thinking about it”, and “Even after performing excellent, I still see some critical points”. Participants responded to each item using a 4-point Likert-type scale from *completely disagree* (0) to *completely agree* (3). High scores represent high need frustration. As assessed by coefficient alpha, internal consistency of this scale was .86.

*Subjective well-being.* According to Diener et al. (1997), subjective well-being consists of two components – a cognitive component (life satisfaction) and an affective component (emotional well-being). Therefore, I used two measures, each of them related to one SWB component. First, participants filled out a Mood Adjective Checklist (*BEF*; Kuhl & Kazén, in prep.), which is an extended version of the PANAS scale (Watson, Tellegen, & Clark, 1988). Since the PANAS items are restricted to arousal and activation, the BEF scale contains items related to positive and negative mood as additional indicators of emotional well-being. Positive mood was assessed with nine adjectives (e.g., happy, active, pleased, joyful), negative mood with 12 adjectives (e.g., helpless, nervous, annoyed, tense, irritable). Participants indicated the extent to which they feel these moods in their everyday life (“In general I feel ...”) using a 4-point Likert-type scale from *not at all* (0) to *very frequently* (3). As assessed by coefficient alpha, the reliability of the two mood scales were  $\alpha = .78$  for positive mood and  $\alpha = .80$  for negative mood.

Second, the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) was administered to assess life satisfaction (cognitive component of subjective well-being). I used the German translation from Jörg Schumacher (see e.g. Sölva et al., 1995; Lettner et al., 1996). The SWLS is a five-item, self-report scale where subjects rate their level of agreement with each item (e.g. „In most ways my life is close to ideal“ and „So far I have got the things I want in life“) on a seven-point Likert scale. A total score is obtained by adding the ratings across all items. High scores indicate high life satisfaction. Several studies confirmed that the SWLS has good reliability and internal consistency (Pavot & Diener, 1993). In the present study, internal consistence was  $\alpha = .82$ .

To create a total Subjective Well-Being score, I used the same procedure reported by Sheldon and Elliot (1999). The SWB score was created by subtracting negative affect from the sum of positive affect and life satisfaction. Supporting the unidimensionality of these composites, principal components analysis of the SWB variables revealed a single primary factor that accounted for 66% of the variance. This result is consistent with the finding that a single factor underlies measures of both life satisfaction and emotional well-being (Diener, 1994).

## *Results and Discussion*

### *Gender Differences*

First, I examined the main effect of gender on all study variables. Two gender differences were found: Women scored higher than men in emotional well-being ( $M = 45.23$  vs.  $M = 40.55$ ,  $F = 4.53$ ,  $p < .05$ ) as well as in life satisfaction ( $M = 21.27$  vs.  $M = 17.60$ ,  $F = 5.87$ ,  $p < .05$ ). However, regression analyses established that gender did not interact with any of the effects reported below. Therefore, gender is not discussed further.

### *Life Balance and Subjective Well-Being*

The purpose of Study 1 was to replicate the typical finding that balance in life is related to well-being. A total Life Balance score was computed by summing up the scores of the Life-Balance Checklist and the Life-Balance Questionnaire. Both specific effects of either life balance measure as well as their combined effect were examined. Table 2.1 presents the correlations between all variables included. As expected, life balance was positively associated with subjective well-being. In addition, need frustration was negatively

related to both life balance and subjective well-being. This finding was consistent with the expectation and allowed for testing the mediation hypothesis.

Table 2.1

*Study 1: Correlations between Major Study Variables*

Variable	1	2	3	4	5
1. Life-Balance Checklist	---				
2. Life-Balance Questionnaire	.45	---			
3. Life Balance total	.80	.89	---		
4. Subjective Well-Being	.31	.30	.34	---	
5. Need Frustration	-.28	-.30	-.31	-.53	---

*Note.* All correlations are significant at  $p < .05$ . Correlation of .45 and more are significant at  $p < .01$ .

#### *Testing the Mediation Hypothesis*

Following the procedure recommended by Baron and Kenny (1986), I conducted a series of path analyses to establish mediation (see Figure 2.1). First, a hierarchical regression analysis was conducted on subjective well-being (SWB total) with life balance (Life Balance total) entered in block one. Second, a hierarchical regression analysis was conducted on need frustration with life balance. Finally, life balance and need frustration were entered into the equation simultaneously (controlling for the main effect of life balance). The relevant relationships are displayed in Figure 2.1. The direct relationship between life balance and subjective well-being was significant,  $\beta = .34$ ,  $t = 2.57$ ,  $p < .05$ . Similarly, life balance was predictive of need frustration,  $\beta = -.31$ ,  $t = -2.35$ ,  $p < .05$ . Finally, when life balance and need frustration were simultaneously regressed on subjective well-being, need frustration had a significant effect ( $\beta = -.45$ ,  $t = -3.62$ ,  $p < .001$ ), and the effect of life balance became smaller and was no more significant ( $\beta = .20$ ,  $t = -1.60$ , *ns.*). According to the Sobel test for mediation (Sobel, 1982; see Baron & Kenny, 1986), this mediation effect was marginal significant ( $Z = 1.92$ ,  $p < .06$ ). Performing the mediation model with the Life-Balance Checklist and the Life-Balance Questionnaire separately, I obtained similar results. In the interest of brevity, I present only Sobel's coefficients for mediation. Need frustration partially mediated the direct effect of both life balance measures on subjective well-being ( $Z = 1.91$ ,  $p < .06$  using only the LBC;  $Z = 1.94$ ,  $p = .052$  using only the LBQ). The findings support the hypothesized mediating role of need fulfillment (assessed re-

versely in terms of need frustration) in the relationship between life balance and subjective well-being. It appears that spending appropriate time on the four life areas as well as perceiving sufficient amount of time as being available in each life area facilitates behavior toward the fulfillment of individuals' needs, and, in doing so, has a positive impact on the level of well-being. Conversely, poor life balance would increase the level of need frustration and have a negative influence on the level of well-being.

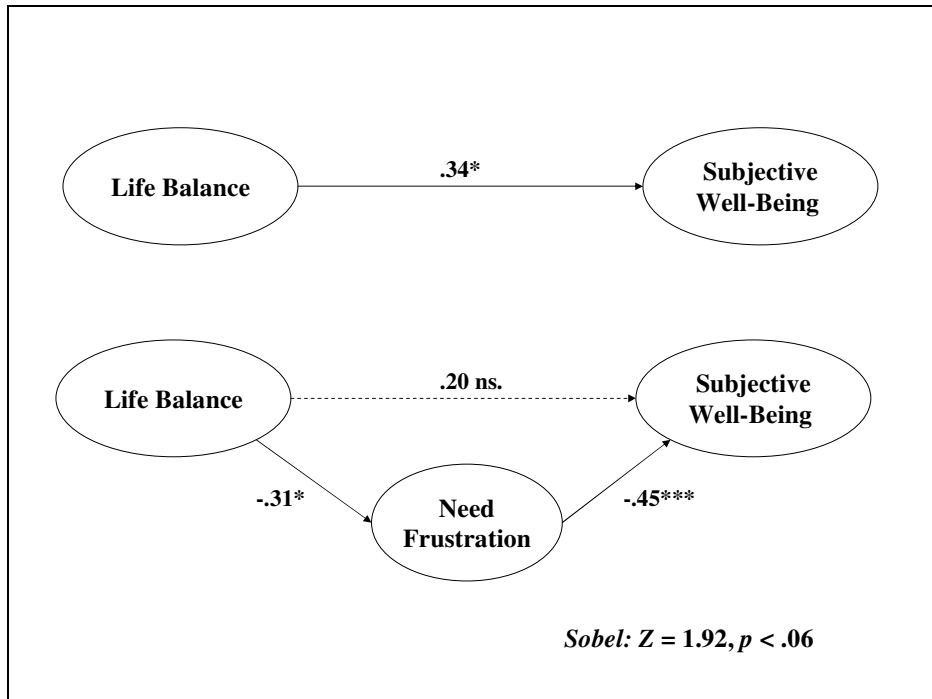


Figure 2.1 Path Analyses Testing the Mediating Role of Need Frustration in the Relationship between Life Balance and Subjective Well-Being (Study 1).

## Study 2

The design of Study 2 is similar to that of Study 1, except that need fulfillment is assessed positively and more specifically. Study 1 provided the results expected and explains why and when life balance predicts well-being. The frustration of basic social needs was found to be a mediator of this relationship. In Study 2 I focus on the fulfillment of more specific needs. Instead of examining the three basic social needs in general, I now investigate more specific needs related to various domains of life (e.g., intimacy, sociability, status, autonomy, performance, control, sense of meaning, self-reward). The fulfillment of such needs should more sensitively reflect the effectiveness of balanced time allocation. As before, I assume the appropriateness of time spent on major life areas to foster the fulfillment of needs related to the main life domains, and finally to affect the individuals' well-being.

## *Method*

### *Participants*

Participants were 53 undergraduate volunteers (46 women, 7 men) from University of Trnava, Slovakia. Their mean age was 22.2 years (range 18 to 33 years).

### *Measures*

The same measures used in Study 1 were used in Study 2 except for the following changes. Instead of the Needs Frustration Scale, I used the short version of the Incongruence Questionnaire (*INK*; Grosse Holtforth & Grawe, in press) as a measure of needs fulfillment. The *INK* is a self-report questionnaire assessing the subjective degree to which a person experiences satisfaction with the attainment of approach and avoidance goals, and fulfillment of his or her needs. The short version consists of 23 items related to intimacy, sociability/separation, acceptance, altruism, receiving help, approval, status, autonomy/dependence, performance/failure, control, understanding, sense of meaning, excitement, trust in oneself/embarrassment, and self-reward. Example items are: “In recent times, I have had many social contacts”, or “In recent times, I have perceived my life as meaningful”. Participants responded to each item using the 5-point Likert scale from *not at all* (1) to *very frequently* (5). High scores represent high need fulfillment. As assessed by coefficient alpha, internal consistency of this scale was .80.

## *Results and Discussion*

### *Gender Differences*

Gender had no main effects on any of the variables included in Study 2. In addition, regression analyses established that it did not interact with any of the effects reported below. Therefore, gender is not discussed further.

### *Life Balance, Need Fulfillment and Subjective Well-being*

For computing the total scores of life balance and well-being, I used the same procedure described in Study 1. Table 2.2 presents the correlations between all variables. Life balance was positively associated with subjective well-being. Further, need fulfillment was positively related to both life balance and subjective well-being.

Table 2.2  
*Study 2: Correlations between Major Study Variables*

Variable	1	2	3	4	5
1. Life-Balance Checklist	---				
2. Life-Balance Questionnaire	.32	---			
3. Life Balance total	.63	.94	---		
4. Subjective Well-Being	.33	.36	.42	---	
5. Need Fulfillment	.32	.47	.52	.77	---

*Note.* All correlations are significant at  $p < .05$ . Correlation of .42 and more are significant at  $p < .01$ .

I conducted regression analyses to test the mediating role of need fulfillment. In accordance with the conceptual criteria for mediation (Baron & Kenny, 1986), the direct effect of life balance on subjective well-being became nonsignificant in this analysis ( $\beta = .01, t = 0.12, ns.$ ), whereas the association between need fulfillment and well-being remained highly significant ( $\beta = .79, t = 7.18, p < .001$ ). The mediation model is shown in Figure 2.2. Using Sobel’s (1982) procedure for testing the significance of mediation, the mediation effect was highly significant ( $Z = 3.46, p < .001$ ).

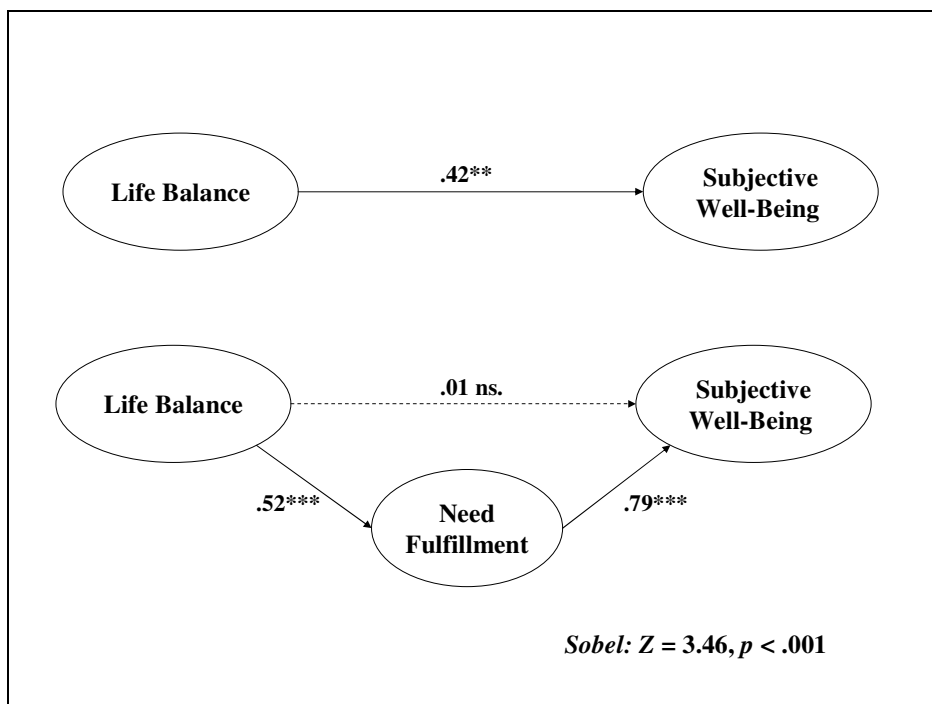


Figure 2.2 Path Analyses Testing the Mediating Role of Need Fulfillment in the Relationship between Life Balance and Subjective Well-Being (Study 2).

Testing the mediation model with the Life-Balance Checklist and the Life-Balance Questionnaire separately, I obtained similar results. Need fulfillment mediated the direct effect of both life balance measures on subjective well-being ( $Z = 2.19, p < .05$  using only the LBC;  $Z = 3.18, p < .01$  using only the LBQ). As in Study 1, the findings supported the hypothesized mediating role of need fulfillment for the relationship between life balance and subjective well-being. Spending appropriate time on the most important life areas as well as perceiving sufficient amount of time available in each life area facilitated behavior toward the fulfillment of individuals' needs and, as a result, positively affected the level of well-being.

### Study 3

The purpose of Study 3 was to replicate the findings from Studies 1 and 2. The design was identical with the two studies. Using regression procedures to test the mediating role of need fulfillment, I sought to examine the stability of the mediation effects obtained in Studies 1 and 2. Moreover, I used the structural equation modeling (SEM) procedures to test the overall fit of my mediation model.

### *Method*

#### *Participants*

The sample comprised 73 undergraduate volunteers (51 women, 22 men) from University of Osnabrück, Germany. Their mean age was 24.5 years (range 19 to 40 years).

#### *Measures*

The questionnaires were the same as in Study 1 and Study 2.

### *Results and Discussion*

#### *Gender Differences*

As in Study 1, women scored higher than men in emotional well-being ( $M = 46.51$  vs.  $M = 41.55, F = 8.35, p < .01$ ) as well as in life satisfaction ( $M = 18.10$  vs.  $M = 15.23, F = 7.36, p < .01$ ). However, regression analyses established that gender did not interact with any of the effects reported below. Therefore, gender is not discussed further.

*Life Balance, Need Frustration and Subjective Well-being*

Total scores of life balance and well-being were computed according to the procedure described in Study 1. Table 2.3 presents the correlations among all variables. Life balance was positively correlated with subjective well-being. Thus, achieving balance in life was predictive of the combined score for emotional and cognitive evaluation of life (i.e., subjective well-being). Furthermore, need fulfillment was positively related to both life balance and subjective well-being, and negatively to need frustration.

Table 2.3

*Study 3: Correlations between Major Study Variables*

Variable	1	2	3	4	5	6
1. Life-Balance Checklist	---					
2. Life-Balance Questionnaire	.38	---				
3. Life Balance total	.71	.92	---			
4. Subjective Well-Being	.45	.39	.49	---		
5. Need Fulfillment	.27	.34	.38	.65	---	
6. Need Frustration	-.26	-.35	-.37	-.51	-.59	---

*Note.* All correlations are significant at  $p < .05$ . Correlation of .34 and more are significant at  $p < .01$ .

To test the mediation model of Study 1, I regressed subjective well-being on life balance and need frustration simultaneously. In this analysis, need frustration was significant ( $\beta = -.38$ ,  $t = -3.65$ ,  $p < .01$ ) as well as life balance ( $\beta = .35$ ,  $t = 3.34$ ,  $p < .01$ ). Although the life balance effect was not eliminated, Sobel's (1982) procedure for testing the indirect, mediational relationships yielded a significant coefficient ( $Z = 2.43$ ,  $p < .05$ ), indicating partial mediation. Performing the model with the Life-Balance Checklist and the Life-Balance Questionnaire separately, I obtained similar results ( $Z = 1.96$ ,  $p = .05$  using only the LBC;  $Z = 2.40$ ,  $p < .05$  using only the LBQ).

*Life Balance, Need Fulfillment and Subjective Well-being*

Similarly, for testing the mediation model of Study 2, I regressed subjective well-being on life balance and need fulfillment simultaneously. In this analysis, need fulfillment was significantly predictive of subjective well-being ( $\beta = .54$ ,  $t = 5.83$ ,  $p < .001$ ). However, the direct relationship of life balance remained also significant ( $\beta = .28$ ,  $t = 3.06$ ,  $p < .01$ ).



Although the life balance effect was not eliminated, Sobel's (1982) procedure yielded a significant coefficient ( $Z = 2.90, p < .01$ ), indicating partial mediation. Analyzing the effects of the Life-Balance Checklist and the Life-Balance Questionnaire separately, need fulfillment partly mediated the direct effect of both life balance measures on subjective well-being ( $Z = 2.21, p < .05$  using only the LBC;  $Z = 2.70, p < .01$  using only the LBQ). Thus, Study 3 replicated the findings from Studies 1 and 2. Both need frustration and need fulfillment mediated the direct effect of life balance on well-being. Finally, I tested the simultaneous effect of all measures computing a single structural equation model (see Figure 2.3).

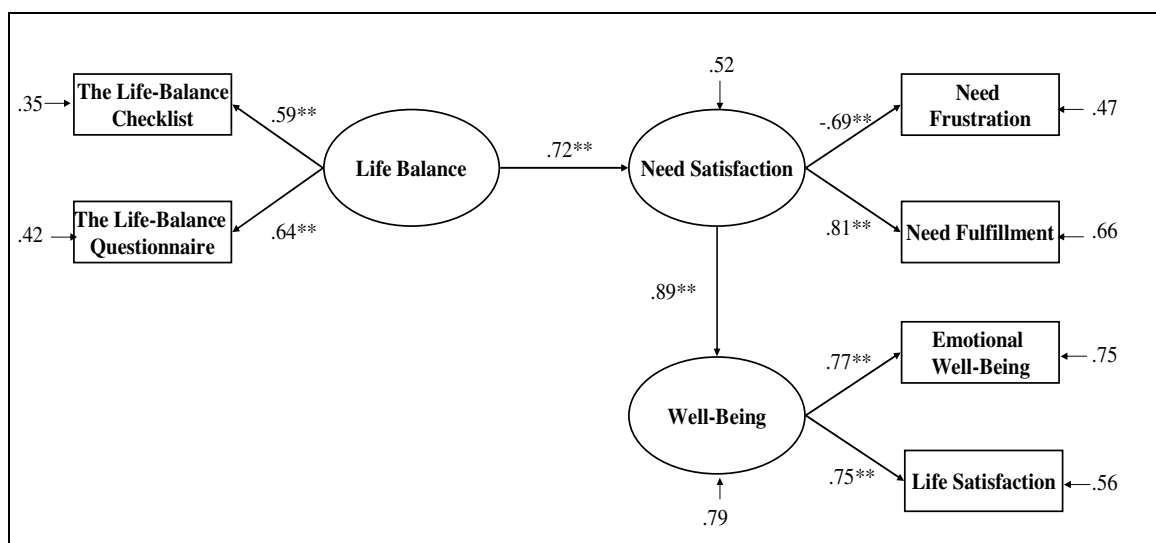


Figure 2.3 The Structural Equation Model Testing the Mediating Role on Need Fulfillment in the Relationship between Life Balance and Subjective Well-Being: Standardized Parameter Estimates. \*\*  $p < .01$ .

Life balance, need fulfillment and subjective well-being were investigated as latent variables composed of the relevant measures. I used AMOS-5 (Arbuckle & Wothke, 1999; Arbuckle, 2003) for performing this analysis. As can be seen in Figure 2.3, all hypothesized path coefficients were significant. To evaluate the overall fit of the model, I examined the chi-square statistic as well as the goodness-of-fit index (GFI), the normed fit index (NFI), the comparative fit index (CFI), the standardized root mean square residual (sRMR), and the root mean square of approximation (RMSEA). According to Homburg and Baumgartner (1995), the chi-square statistic should not be significant, and the relative chi-square ( $\chi^2/df$ ) should be 2.5 or less. Values of the fit indexes GFI, NFI and CFI close to 1 indicate a very good fit of a model and should not be less than 0.9, as noted in the AMOS manual (Arbuckle & Wothke, 1999). In contrast, RMSEA and sRMR should be low; Zero

indicates a perfect fit. According to Browne and Cudeck (1993), a value of about 0.08 or less for the RMSEA indicates a reasonable error of approximation. Respecting these conventional criteria, the model fitted the data:  $\chi^2(7, N = 73) = 9.06, p = .25, \chi^2/df = 1.29$ ; GFI = .96, NFI = .94, CFI = .99; sRMR = 0.05, RMSEA = 0.06. These statistics indicated a satisfactory fit between the hypothetical model and the sample data. Thus, the general role of need fulfillment as a mediator between life balance and subjective well-being was supported in this study. In other words, participants who were able to balance their time more adequately were found to be more likely to fulfill own needs within that time and therefore to experience higher well-being.

### General Discussion

The aim of the present research was to examine the relationship between life balance and subjective well-being. The three studies reported provide support for the existence of this relationship and, moreover, help to explain why it exists. In all three studies, I replicated the well-documented finding, that balance in life and subjective well-being are positively related (e.g., Grant-Vallone & Donaldson, 2001; Noor, 2004; Rice et al., 1992). The appropriateness of time spent on the four life areas included and the sufficiency of time available for each life area predicted the level of well-being. Thus, participants who reported higher balance in life also reported higher levels of well-being.

Furthermore, these studies extend previous research on work-family balance in several ways. First, addressing the suggestions that the work-life system is multi- and not just two-dimensional (Amundson, 2001; Warren, 2004; Seiwert, 2000, 2001), I focused on the balance among four life domains which were previously identified as the most important life areas (see Seiwert, 2000, 2001). Consistent with my recent findings (see Paper 1), the balance among major life areas was found to be beneficial for well-being. Second, I specified the relationship between life balance and the well-being. The idea was that balanced time is not a cause but only a prerequisite of well-being. The utilization of time for need fulfillment was assumed to be a causal factor. To recap Seiwert's (2001) suggestion, "it is not only important to allocate sufficient time across life areas but also to fill that time"; that is, time must be used for enacting goal oriented behavior in order to perceive benefits of life balance. As found in recent investigations, such behavior predicted SWB stronger when the goals reflected the individual's needs and satisfied them (e.g., Baumann, Kaschel, & Kuhl, 2004; Sheldon & Elliot, 1999). Addressing the importance of personal needs, I examined the mediating role of need fulfillment. In Study 1, need fulfillment was

tested in term of the level of frustration of basic social needs (achievement, affiliation, and power). Results supported the expected mediating role of need frustration. Study 2 focused on need fulfillment more specifically. Instead of examining three basic social needs, a greater number of more specific needs was examined. A strong mediating effect was obtained. Balance in life facilitated the fulfillment of personal needs and, as a result, increased the level of well-being. In Study 3, the results of the Studies 1 and 2 were replicated. Furthermore, an SEM procedure also provided support for the general mediation hypothesis. In this mediation model, all hypothesized path coefficients were significant. Moreover, the model showed an excellent fit. Thus, the general role of need fulfillment as a mediator between life balance and subjective well-being was supported in my research. In other words, participants who were able to balance their time adequately across life domains were found to be more likely to fulfill their own needs within the time invested, which resulted in an increased level of well-being.

Notably, the findings of the third study indicated a partial mediation of both need frustration and need fulfillment. In other words, it appears that reaching balance in life may have beneficial effects that partly go beyond the positive experiences engendered by need fulfillment. According to Sheldon and Elliot (1999), one way of understanding the partial mediating role of need satisfaction involves the distinction between bottom-up and top-down influences on well-being. Bottom-up theories assume that well-being emerges from the sum of many specific positive experiences. In this sense, experiences related to need satisfaction represent a bottom-up influence on well-being (Diener, 1984). On the other hand, top-down theories propose that global dispositions or attitudes color people's interpretation of their activities and thus affect well-being directly. Reaching or maintaining balance in life may also provide a broader, top-down influence on well-being by positively influencing participants' self-confidence and acknowledgment from others that they are able to manage their lives effectively. As noted by Sheldon and Elliot (1999), top-down and bottom-up measures have been shown to have equivalent and simultaneous predictive validity. Thus, life balance can also influence the level of well-being directly. However, it is also possible that need fulfillment is not a single mediator. Future research is needed to extend my results and to identify other possible mediators.

Despite the replicated findings reported, the three studies have several limitations. First, I modeled recursive relationships; only one way of causal flow was considered. However, reciprocal relationships among the variables studied can be also assumed. For example, according to the Personality Systems Interaction theory (PSI-Theory; Kuhl,

2001), successful coping with negative affect can activate integrative functions of the right hemisphere which contribute to holistic perceptions of many domains of the internal and external world. Such holistic perceptions can help to simultaneously perceive various demands of life and to balance the time needed for these demands. Moreover, positive affect presumably facilitates the enactment of intentions and goal attainment and thus influences the goal oriented behavior toward need satisfaction (Kuhl & Kazén, 1999). Consistent with this approach, Sheldon and Elliot (1999) found initial well-being to be a predictor of later positive outcomes such as goal attainment and need satisfaction. Second, the data I used were cross-sectional, and thus it is impossible to ascertain the causal ordering of the relations among variables studied. A longitudinal design can remedy this limitation in future research. Third, I did not address the issue of goal attainment directly. Instead, I expected time invested to be fulfilled with the goal oriented behavior toward need satisfaction. An interesting issue for future studies concerns the nature of the goals which are to be attained in the created time. According to the Self-Concordance Model (Sheldon and Elliot, 1999), goals that are in concordance with the self (i.e., a person's authentic interests and values) are important for need satisfaction and well-being. My focus on need fulfillment may be considered a direct way of assessing the attainment of self-concordant goals.

PAPER 3      **Congruence of needs, goals and behavior: A functional approach to life balance and effects on implicit and explicit well-being**

*Abstract:* The purpose of the present research was to address the functional basis of life balance (i. e., balanced investment of time across life domains) and to test its impact on well-being. It is proposed that the congruence of needs, goals and goal attainment within the time invested in goal-relevant behavior can be a functional mechanism underlying life balance. Using implicit methods and self-report scales (Study 1), the congruence of needs, goals and behavior was positively related to life balance and to both explicit and implicit well-being. Testing the impact of the congruence on the level of well-being experimentally (Study 2), only effects on implicit well-being were in expected directions.

Congruence of needs, goals and behavior: A functional approach to life balance  
and effects on implicit and explicit well-being

Over the last decade, much has been written about the importance for individuals to balance their work and life activities. The ability to balance life demands has been found to affect life satisfaction (Fisher, 2002), marital satisfaction (Barnett, Del Campo, Del Campo, & Steiner, 2003), mental health (Grzywacz & Bass, 2003), and well-being (see e.g., Paper 2). In contrast, failure to achieve balance was associated with a variety of negative consequences including increased stress and somatic complaints, less life satisfaction, decreased job satisfaction and reduced productivity, family conflicts, marriage breakup, and overall decrease in the quality of life (e.g., Burke, 1988; Grant-Vallone & Donaldson, 2001; Greenhaus, Collins, & Shaw, 2003; Kofodimos, 1990; Noor, 2004; Rice, Frone, & McFarlin, 1992). In this research, the problems of balancing life demands are thought to depend on how people allocate their time and energy to various life roles. Recently, researcher mostly focused on the balance between work and family responsibilities (i.e., the work-family balance; Hill, Hawkins, Ferris, & Weitzman, 2001). Other authors argue that some additional components are to be taken into account because the work-life system is multi- and not just two-dimensional (Warren, 2004; Seiwert 2000, 2001). Integrating both views, life balance is defined in terms of appropriate proportion of time spent in major life domains that comprises of activities related to work, social contact and family, health, and overall meaningfulness of life (see Paper 1; Seiwert, 2001). Whereas the previous investigations revealed a strong evidence of the importance to balance own life, little research focused on underlying psychological mechanisms related to this balance. Nevertheless, it is important to know which personality functions provide a basis for balancing life domains. Therefore, the aim of the present research is to address the functional basis of life balance and its impact on well-being.

Recent research strongly suggests that life balance is related to well-being (Adams, King, & King, 1996; Arye, 1992; Fisher, 2002; Grant-Vallone & Donaldson, 2001; Greenhaus, Collins, & Shaw, 2003; Noor, 2004; Rice, Frone, & McFarlin, 1992). In Paper 2, I found that need fulfillment mediated this relationship. Thus, participants who were able to balance their time adequately across life domains were found to be more likely to fulfill their own needs within the time invested, which resulted in an increased level of well-being. It was suggested that balanced time affects well-being because an adequate distribution of time across life domains facilitates need satisfaction across motivational domains.

Moreover, an adequate distribution of time across motivational domains may indicate a good ability to attain self-concordant goals (e.g., goals that reflect person's authentic needs, interests and values). These suggestions are consistent with the Self-Concordance Model (Sheldon & Ellion, 1999; see Appendix C) which posits that the attainment of self-concordant goals satisfies a person's needs which in turn has a positive impact on well-being. Sheldon and Kasser (1998) found that participants whose goals were self-congruent (e.g., satisfying personal needs) reported improvements in well-being. Brunstein (2001) and Baumann et al. (Baumann, Kaschel, & Kuhl, 2004) similarly found the congruence between goal orientations and implicit needs to predict the level of well-being. In the two studies reported here, I tested a hypothesis derived from Seiwert's (2001) suggestion that it is not only important to allocate sufficient time across life areas but also to fill it with goal oriented behavior: According to this view, self-congruent goal attainment within the time invested should be a mechanism underlying life balance.

Personality Systems Interaction Theory (PSI-Theory; Kuhl, 2001) provides a useful framework for understanding the processes underlying self-congruent goal attainment. In this theory, a distinction is made between *intention memory*, the functional system specialized on goal setting and maintenance of difficult intentions, and *extension memory*, the functional system which provides a holistic representation of personal needs, values, interests, and many other aspects of self. Thus, goals are associated with the explicit, verbal format of intention memory that is supported by sequential-analytical operations (thinking and planning) and left-hemispherical processing. In contrast, implicit motives and needs are associated with implicit representations in extension memory, an extended semantic network operating according to connectionist principles and supported by intuitive-holistic processes of the right hemisphere. Self-concordance can be conceptualized in terms of a congruent collaboration of both systems, that is, the formation of goals that reflect individual's needs and values. Such goals form a basis for behavior. Need satisfaction requires need-related goals to be translated into actions and to be attained. Goal-related behavior is mediated by a third system described in PSI theory, *intuitive behavior control*, which controls behavioral routines necessary for enacting intended actions and goal oriented behavior. However, in order to attain goals, behavior should be congruent with those goals. This is to say that it is not only important to form self-concordant goals, but also to orient behavior toward attainment of these goals. In other words, in addition to forming self-concordant goals, investing appropriate portions of time in goal-related behavior is also needed for goal attainment. For example, a student wants to reach a particular number of

credits within a term. This goal may reflect his or her need for achievement. During the term, this student spends adequate time visiting lectures and tutorials, reading books, studying materials etc., and finally achieves the desired number of credits. As a result, positive changes in well-being can be expected. In contrast, spending inappropriate time studying (e.g., because of laziness, a lot of parties, a student job) would increase the likelihood of not reaching the goal. Thus, congruence among implicit needs, explicit goals and behavior (i.e., a congruent collaboration of explicit memory, implicit memory, and intuitive behavior control) presumably provide a functional basis underlying life balance and its impact on well-being. In this study, I will test this hypothesis. Congruence among explicit goals, personal (implicit) needs and behavior (including time spent) is expected to be positively related to life balance and well-being. In contrast, discrepancy among needs, goals and behavior should be negatively associated with life balance and well-being.

However, there is one important point which should be considered. Baumann et al. (2004) found that the personality disposition toward *action orientation* facilitates the formation of need-congruent goals. Replicating and elaborating Brunstein's (2001) findings, they found that participants scoring high in action orientation attained more frequently goals that were congruent with their needs. In addition, they observed a strong impact of action orientation on well-being. Moreover, in Gröpel's (2003b) research, action orientation was found to be a buffer against the negative impact of incongruent goal orientations on well-being. Action orientation is conceived of as a general ability to self-regulate affective states under stress (Kuhl, 1994a): the ability to self-generate positive affect in the face of difficulties has been labeled *decision-related action orientation* (AOD) whereas the ability to reduce (downregulate) negative affect after negative events has been called *failure-related action orientation* (AOF). In contrast, decision-related state orientation (SOD) is based on an inability to self-generate positive affect when needed for implementing self-congruent intentions (Beckmann & Kuhl, 1984; Brunstein, 2001; Koole & Jostmann, 2004). Failure-related state orientation (SOF) is conceived of as the inability to volitionally control negative affect. According to PSI theory, this inability results in excessive amounts of negative affect which impair access to extension memory and implicit needs. In stressful situations, self-concordant goals cannot be formed because access to extension and intention memory is required for the formation and maintenance of such goals (Baumann et al., 2004; Kuhl, 2001). Self-incongruent goal orientations work as stressors and have negative effects on affective states and well-being (Gröpel, 2003b). On the other hand, high ability to self-regulate affective states in stressful situations (i.e., action orientation) helps a person



to reduce the negative impact of stress as well as the negative impact of incongruent goals on well-being. In addition, persons high in action orientation are especially skilled at intuitive affect regulation (Koole & Jostmann, 2004). For action-oriented individuals, incongruence is not necessarily related to low well-being because they are able to regulate their affective states. In the studies reported below, individual differences in action vs. state orientation are controlled in all tests of the predicted relationship between well-being and goal-motive discrepancies.

### Study 1

In Study 1 I tested the impact of congruence among needs, goals and behavior on well-being using questionnaires for assessing goals and well-being and a picture-based method for assessing implicit motives. Apart from explicit well-being, I also examined the level of implicit well-being. Following Diener's suggestion (Diener & Biswas-Diener, 2000) that, additionally to self-report questionnaires, other types of measures can be helpful for assessing well-being, I administered an alternative implicit measure in order to obtain more valid results. I expected the congruence among needs, goal orientations\* and behavior to be related to both explicit and implicit well-being, and to life balance.

### *Method*

#### *Participants*

Participants were 66 student volunteers from the University of Osnabrück (45 women and 21 men) who completed the questionnaires. Their mean age was 24.5 years (range 20 to 49 years). It took about 45 minutes to complete all materials.

#### *Measures*

*Implicit Needs.* Three social needs have been studied extensively in motivation research: achievement, affiliation, and power (McClelland, 1985). According to theories of motivation, such needs or implicit motives energize need-related goals and behavior. The Operant Motive Test (OMT; Kuhl & Scheffer, 1999) was administered to assess these implicit needs. Using a modified TAT technique (Murray, 1943), participants were con-

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\* Rather than investigating concrete goals, I focused on goal orientations in Study 1. Goal orientations help to comprise larger area of explicit behavioral choices. Besides, the orientation toward some kinds of goals can be also viewed as a goal. For example, "chatting with friends for the pleasure of doing it" can be considered in terms of affiliation orientation as well as in terms of large goal (interpersonal interaction = goal).

fronted with 15 pictures and asked to invent a story and give their spontaneous associations to the following questions (without having to write down the story): (1) “What is important for the person in this situation and what is the person doing?”, (2) “How does the person feel?”, (3) “Why does the person feel this way?”, and (4) “How does the story end?”. The OMT differentiates four approach components for each motive. This differentiation allows testing theoretically interesting differences in the type of self-regulation involved in need-satisfaction. However, for the purpose of the present study, the four approach components of each motive were combined to assess the overall implicit needs for affiliation, achievement and power. Scoring was carried out by well-trained assistants. Evidence confirming the validity of the implicit motive association test has been reported elsewhere (Kuhl & Scheffer, 1999; Scheffer, 2001).

*Goal Orientations.* Explicit goal orientations were assessed by 12 items (four items for each goal orientation) taken from the Motive Enactment Test (MUT; Kuhl, 1999b). Example items of the affiliation goal orientation are: “I like to speak with nice people about all possible things”, “Human closeness is more important to me than achievement”. Example items of the achievement goal orientation are: “When I have solved a difficult problem I enjoy looking for the next challenge right away”, “I often engage spontaneously in activities in which I can test my abilities”. Example items of the power goal orientation are: “I often play a hero in my day-dreams“, “I like to get other people interested in the things I want to“. Participants responded to each item using a 4-point Likert-type scale from *completely disagree* (0) to *completely agree* (3). In the present study, internal consistencies were  $\alpha = .74$  for affiliation,  $\alpha = .65$  for achievement and  $\alpha = .60$  for power.

*Behavior.* Time spent in various need-related activities was measured by using the Work/Achievement subscale and the Social Contact subscale adopted from the Life-Balance Checklist (LBC; see Paper 1). For my research purpose, I developed an additional subscale named the Power subscale. These subscales measure the degree to which a person believes he or she spends appropriate amounts of time doing activities related to achievement, affiliation, and power orientation. The leading question is: “*How much time do you spend on...*” followed by items related to achievement (work; your career; achieving goals; work success); affiliation (meeting friends; family; maintaining friendships; seeing friends/acquaintances; making new contacts), and power (taking charge of something; doing executive function). Participants responded to each item using a 10-Point Likert-type scale which ranged from *too little time* (1) to *too much time* (10). Both extremes represent inappropriateness of time spent across areas of life, whereas the middle of the Likert scale

(points 5 & 6) represents appropriate amounts of time spent across life domains. Therefore, the partial scores obtained from the 10-points Likert scale were centrally rescored before computing the subscale scores. The logic of this rescoring was: central points 5 & 6 were rescored to the value “5” which represents the maximal appropriateness of time spent; points 4 & 7 were rescored to the value “4”; points 3 & 8 to the value “3”; points 2 & 9 to the value “2”; and the last points 1 & 10 to the value “1” representing maximum inappropriateness of spent time. The scores for each subscale were computed by summing up resultant scores across relevant items. Previous research supported adequate internal and external validity of the LBC (see Paper 1). In the present study, internal consistencies were  $\alpha = .81$  for affiliation/social contact,  $\alpha = .81$  for work/achievement and  $\alpha = .74$  for power.

*Explicit Well-Being.* Participants filled out a Mood Adjective Checklist (*BEF*; Kuhl & Kazén, in prep.), which is an extended version of the PANAS scale (Watson, Tellegen, & Clark, 1988). Whereas the PANAS items are restricted to arousal and activation, the BEF scale contains additional items related to positive and negative mood as indicators of emotional well-being. Positive mood was assessed with nine adjectives (e.g., happy, active, pleased, joyful), negative mood with 12 adjectives (e.g., helpless, nervous, annoyed, tense, irritable). Participants indicated the extent to which they feel these moods in their everyday life (“In general I feel ...”) using a 4-point Likert-type scale from *not at all* (0) to *very frequently* (3). As assessed by coefficient alpha, the reliability of the two mood scales were  $\alpha = .78$  for positive mood and  $\alpha = .80$  for negative mood. The explicit well-being score was created by standardizing the positive and negative mood, then subtracting negative mood from positive mood.

*Implicit Well-Being.* The Implicit Positive and Negative Affect Test (IPANAT; Kuhl & Kazén, 2002) was administered to measure implicit well-being. This test consists of six words from an artificial language (SAFME; VIKES; TUNBA; TALEP; BELNI; SUKOV). Participants rate to what extent these words express positive and negative mood using a 4-point Likert scale from *does not fit at all* (0) to *fits very well* (3). The instruction to this test is: „*The following words are from an artificial language. They are intended to express various moods. In all languages, there are words that already express their meanings by means of the way they sound (for example, the word “rattle” sounds almost like something that rattles). For each of the following words, please judge how well they express different moods. For example: How much does the sound of the artificial word “SAFME” convey each of the following moods – pleased, at a loss, energetic, tense, passive, relaxed, or aggressive? In doing these judgments, follow your spontaneous feelings.*”

Positive mood was assessed with three adjectives (pleased, energetic, relaxed), negative mood with four adjectives (at a loss, tense, passive, aggressive). The implicit well-being score was created by standardizing the positive and negative mood, then subtracting negative mood from positive mood. The IPANAT was found to have sufficient internal consistency (Quirin, in prep.).

*Life Balance.* I administered the Life-Balance Questionnaire (*LBQ*; see Paper 1) which assesses perceived sufficiency of time available for the main areas of life (work/achievement, social contact/relationships, health/body, meaningfulness of life). A high total score indicates sufficiency of time available for the four life areas. The *LBQ* has an adequate internal and external validity (see Paper 1).

*Action Orientation.* In order to control for any moderating effect of action orientation on the relationships between well-being and goal-need discrepancies, the Action Control Scale (*ACS-90*; Kuhl, 1994b) was administered to assess the action vs. state orientation. An example item of the decision-related dimension is: “When I know I must finish something soon: (a) I have to push myself to get started, or (b) I find it easy to get it done and over with”. Option *a* reflects the state orientation and option *b* the action orientation response alternative. An example item of the failure-related dimension is: “When I am told that my work has been completely unsatisfactory: (a) I don’t let it bother me for too long, or (b) I feel paralyzed”. Option *a* reflects the action orientation and option *b* the state orientation response alternative. The *ACS* has sufficient reliability (Cronbach’s alphas  $> .70$ ) and adequate construct validity (Kuhl & Beckmann, 1994). The factorial structure of the *ACS-90* confirms the theoretical distinction made between the *AOD* and *AOF* components of action orientation (Dieffendorf, Hall, Lord, & Streat, 2000; Kuhl, 1994b). In the present study, *AOD* and *AOF* scales had internal consistencies of  $\alpha = .82$  and  $\alpha = .87$ , respectively.

### *Results and Discussion*

The score of congruence/discrepancy among needs, goal orientations and behavior was calculated in three steps. First, the scores from *OMT* (implicit needs), *MUT* (goal orientations) and *LBC* (behavioral score) were standardized. Second, the absolute differences between needs (*OMT*) and goal orientations (*MUT*), between needs and behavioral scores (*LBC*), and between goal orientations and behavioral scores were computed. Finally, summing up these three differences, a congruence/discrepancy score for every motivational area (achievement, affiliation, power) was obtained. Value of zero represented perfect congruence among needs, goals and behavior, whereas values greater than zero repre-

sent the discrepancies. Summing up discrepancy scores across achievement, affiliation and power, the total discrepancy score was obtained.

The purpose of Study 1 was to test the hypothesis, that the congruence vs. discrepancy among needs, goal orientations and behavior is related to life balance and well-being. Gender had no main effect on any of the variables in Study 1. Therefore, gender is not discussed further. Table 3.1 presents zero-order correlations between all variables. Discrepancy scores were negatively associated with life balance. However, the discrepancy score for achievement did not significantly correlate with life balance. Analyzing the relationship only for the work/achievement subscale of the LBQ (which is the relevant subscale for achievement area), the discrepancy score in achievement was marginal related to this subscale ( $r = .24, p < .10$ ). Thus, the hypothesis that the congruence among needs, goal orientations and behavior affects life balance was partly supported.

Table 3.1

*Study 1: Zero-Order Correlations between Major Study Variables*

Variable	1	2	3	4	5	6	7	8
1. AOD	---							
2. AOF	.31*	---						
3. Explicit Well-Being	.42**	.54**	---					
4. Implicit Well-Being	.26*	.20	.26*	---				
5. Life Balance	-.14	.27*	.30*	.08	---			
6. Achievement – Disc.	.08	-.14	-.23+	-.26*	-.10	---		
7. Affiliation – Disc.	-.06	-.24+	-.35**	-.29*	-.23+	.38**	---	
8. Power – Disc.	.15	-.23+	-.28*	-.22+	-.27*	.21	.43**	---
9. Total Discrepancy	.05	-.28*	-.38**	-.35**	-.26*	.70**	.82**	.72**

*Note.* AOD – decision-related action orientation; AOF – failure-related action orientation; Disc. – Discrepancy; +  $p < .10$ ; \*  $p < .05$ ; \*\* $p < .01$ .

Discrepancy scores were significantly and negatively correlated with both explicit and implicit well-being. However, some of these correlations were marginal. In addition, action orientation was found to have a main effect on well-being as well as on discrepancy. Therefore, I computed partial correlations between discrepancy and well-being controlling for action orientation (see Table 3.2). This procedure replicated the relations obtained between well-being and discrepancy scores. The total discrepancy score was significantly

associated with low level of both explicit and implicit well-being. The discrepancy scores in achievement, affiliation and power were also negatively related to implicit and explicit well-being. Thus, my hypothesis seems to be supported. In accordance with the findings of Sheldon and Elliot (1999), participants whose goal orientations reflected their personal needs and who attained such self-concordant goals experienced higher well-being. In contrast, participants who experienced some discrepancy among their needs, goal orientations and behavioral activities scored lower on well-being.

Table 3.2

*Study 1: Partial Correlations between Motives-Behavior Incongruence (Discrepancy) and Well-Being Controlling for Both Forms of Action Orientation*

Variable	Explicit Well-Being	Implicit Well-Being
Achievement – Discrepancy	-.22+	-.28*
Affiliation – Discrepancy	-.30*	-.27*
Power – Discrepancy	-.30*	-.25+
Total Discrepancy	-.37**	-.36**

*Note.* +  $p < .10$ ; \*  $p < .05$ ; \*\* $p < .01$  (two-tailed).

## Study 2

Study 2 was aimed at replicating the findings of Study 1 by using an experimental design. Two controversial hypotheses were tested. Manipulating the discrepancy between needs and goals or behavior, I focused on the relationship between congruence and well-being. In an experimental computer task, I manipulated the congruence vs. discrepancy among needs, goals and behavior. In the discrepancy hypothesis, positive changes in well-being in congruent situations and negative ones in discrepant situations were expected. In addition, I focused on general goal attainment process. Achieving goals generally leads to the positive changes in well-being (Brunstein, 1993; Elliot & Sheldon, 1997; Emmons, 1996). Although this effect was stronger when the person's goals were more self-congruent, there was still a direct significant path between goal attainment and well-being (Sheldon & Elliot, 1999). Thus, it appears that there are natural satisfactions to be found in the process of exercising one's competencies to move toward outcomes although the goals attained are not self-concordant. In the general goal attainment hypothesis, goal attainment was expected to influence well-being positively in discrepant as well as in congruent situation.

## *Method*

### *Participants and Design*

Fifty-two paid volunteers at the University of Osnabrück (15 men and 37 women, average age 24.4 years) participated in the experiment. Participants were randomly assigned to three groups – one control (N = 18) and two experimental groups (N = 17 each). There were no significant differences in gender or age among these three samples. The experimental design consisted of a 2 (congruence vs. discrepancy between needs and goals) by 2 (congruence vs. discrepancy between goals and behavior) design. The main dependent variable consisted of participants' changes in explicit and implicit well-being.

### *Procedure*

Participants were exposed to two separate sessions. First, they received questionnaires about their action orientation (ACS-90), self-regulation competences, and implicit needs (OMT) and were asked to return the completed questionnaires within the next days. It took about 30 minutes to complete the materials. Second, after receiving the questionnaires, participants were invited to an individual lab session. On arrival at the laboratory, participants were escorted to individual cubicles, each containing an IBM-compatible computer. The experimenter explained that the remaining instructions would be administered via a computer program, and left. Participants were first informed by the program that they took part in an evaluation study of a new assessment centre program. They were told the program assessed self-regulation competences that are needed to work like a management trainer, coach, or human resources manager. After receiving this information, participants rated their feelings on a series of mood adjectives. Both explicit and implicit well-being was examined. The explicit well-being measure was administered first, followed by the implicit well-being measure. Participants then moved on to the next step, which consisted of goal setting (first part of experimental task). The goals were set by computer program and were congruent with or discrepant to the participant's implicit needs as measured by the OMT during the first experimental session. Subsequently, participants rated their feelings for a second time. Next, participants proceeded with behavioral activities (on the computer) related to the goals set during a previous phase of the experiment (second part of experimental task). Programmed behavioral imputes were congruent or discrepant to the goals set. After this, participants rated their feelings for a third

time and completed some postexperimental questions. Finally, participants were paid, debriefed, and thanked for their participation. Several days later, participants received detailed feed-back about their self-regulation competences via e-mail\*\*.

### *Experimental Task*

The experimental task was introduced as an assessment center programmed on computer. After initial well-being measurement, participants were informed they work as a trainer in an international company “Management GmbH” (the name used only for the experiment). During the months to come, the company should conduct a series of management seminars and trainings for an important and strategic client. Participants’ task was to prepare a management training related to the one of three main areas: achievement-oriented training (How to be the best), power-oriented training (Team leadership and self-assertion), or affiliation-oriented training (Relationships on work place and social competences). As can be seen, the main training areas corresponded with the three basic social needs (achievement, affiliation, power). In the first part of experimental task, participants were told they were assigned five concrete topics from their boss to prepare. All these five topics were related only to one training area and were thought to represent goals that should be attained (prepared) in the second part of experimental task. Example topics from the achievement area are: “Better than others: How to win?”, or “Increasing own work motivation”. Example topics from the affiliation area are: “How to overcome interpersonal problems?”, or “Having fun together: A basis for a good team”. Example topics from the power area are: “Steps of effective coaching”, or “Self-assertion: How to act self-confidently?” Participants were instructed they were to take some time to think about each topic, to think about what would fit to a concrete topic, how own experiences can be useful by preparing these topics etc. Participants were told they should memorize their thoughts because they would be able to use them in the second phase of the experimental task.

*Manipulation 1.* In the first session of the experiment, I administered the Operant Motive Test (OMT) to measure the strength of each basic social need. Based on these results, congruent or discrepant topics (goals) were given to the participants, depending on

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\*\* Before starting experiment, I motivate participants to work well on experimental task by saying that they receive detailed feedback about their self-regulation competences needed for work in management area. However, the experimental task focused on other research questions and did not measure self-regulation competences. Therefore, in the first questionnaire session of the experiment, I administered a short version of the Volitional Components Inventory (Kuhl & Fuhrmann, 1998). In this inventory, self-regulation competences such as self-determination, self-motivation, self-relaxation, ability to plan effectively, initiative, concentration etc. are assessed. However, this measure was not used for research purpose but only for providing participants with the feed-back about their managerial abilities.



experimental condition. In the congruent condition, for example, participants scoring high in power motivation received power-related topics (goals). In the incongruent (discrepant) condition, participants scoring high on power received topics related to the need which was the weakest for that person (e.g., achievement or affiliation). Participants in the control group and in experimental group 1 received congruent goals, whereas participants in experimental group 2 received discrepant goals. After the first part of experimental task, participants filled out the measures about their current well-being. I expected participants in the control group and in the experimental group 1 to experience increases in well-being (compared to their initial well-being and to participants in experimental group 2).

In the second step of the experimental task, participants were instructed to work on preparation of their management seminar (i.e., to perform some behavioral activities). The program created a small web-mail server with six incoming mails. The mails were sent from participants' virtual colleagues and clients, and consisted of concrete tasks that should be worked on. For example: to write and send an abstract of the management seminar, to decide about the picture which should represent the topic of the seminar (four pictures were given to choose from), to choose and describe a concrete method which should be used in the management training, to send an information mail about aims of training etc. Participants had to work on and answer all mails, it did not matter how much time they needed. All six mails were related only to one training area (achievement, affiliation, or power). They were directly related to the topics (goals) presented in the first part of experimental task. All mail tasks were standardized across the three training areas. After answering all mails (i.e., behavioral acts), the answers were saved in ".txt" format to allow for control how good participants had worked on the mailing tasks.

*Manipulation 2.* In the second part of the experimental task, participants worked on the mailing tasks directly related (congruent situation) or unrelated (discrepant situation) to the topics presented in the first part. This means, their behavior was congruent with or discrepant to the goals (topics) of part 1. In the congruent situation, for example, a person who received achievement-oriented topics in part 1 worked on the achievement-related mailing tasks. In the discrepant situation, for example, a person who received achievement-oriented topics in part 1 worked on the affiliation or power-related mailing tasks by instructing him or her that, instead of the colleague who is fallen sick, he or she would have to prepare the colleague's training now because of its importance and urgency (the instruction from boss). Participants in the control group and in experimental group 2 received mailing tasks that were congruent with their goals (topics) whereas participants in experi-

mental group 1 received mailing tasks discrepant to their goals. After working on the mailing tasks, well-being was measured. I expected participants in control group and in experimental group 2 to experience higher well-being when compared with their previous level of well-being and with the participants in experimental group 1 (the discrepancy hypothesis). According to the general goal attainment hypothesis, increase in well-being in all groups was expected.

Thus, I had three groups. The control group received congruent topics (goals) and congruent mailing tasks (behavior). Experimental group 1 received congruent goals, but mailing tasks that were discrepant to these goals. Experimental group 2 received discrepant goals, but mailing tasks congruent with these goals. Each participant got a special code from the experimenter before starting the experimental task. According to this code, the computer program provided participants with a concrete training area, and with congruent or discrepant situations. Immediately after the third measurement of well-being, two additional questions were given to participants. First: “How interesting was this assessment center?” (i.e., the experimental task). Second: “How frustrating was this assessment center?” (i.e., the experimental task). Participants answered the questions using a 4-point Likert scale from “*not at all*” (1) to “*completely*” (4). After answering these two questions, participants were informed they are at the end of experiment and the program terminated automatically. It took about one and half hour to complete the experimental task.

### *Measures*

Assessment of implicit needs (OMT) and action orientation (ACS-90) was the same as in Study 1.

*Explicit well-being.* Measurement of explicit well-being was similar that employed in Study 1. Participants filled out a mood adjective checklist using 10 adjectives. Positive mood was assessed with four adjectives (happy, active, pleased, energetic), negative mood also with four adjectives (helpless, nervous, tense, sad). Two additional adjectives (satisfied, balanced) were used to measure participants’ feelings of satisfaction. Positive and negative affects, and satisfaction are the three basic components of well-being (Diener, Suh, & Oishi, 1997). Participants indicated the extent to which they feel these moods at present (“Currently I feel ...”) using a 5-point Likert-type scale from *not at all* (1) to *completely* (5). As assessed by coefficient alpha, all coefficients satisfied traditional standards ( $\alpha_s > .70$ ). The explicit well-being score was created by standardizing positive mood, nega-

tive mood, and satisfaction, then subtracting negative affect from the sum of positive affect and satisfaction.

*Implicit well-being.* Measurement of implicit well-being was similar as in Study 1. The Implicit Positive and Negative Affect Test (IPANAT; Kuhl & Kazén, 2002) was administered using only three words from an artificial language (SAFME; TUNBA; TALEP). Participants rated the extent to which these words express positive mood, negative mood, and satisfaction using a 4-point Likert scale from *does not fit at all (0)* to *fits very well (3)* (e.g., SAFME = happy, SAFME = tense, etc.). The instruction was the same as in Study 1. Positive mood was assessed with four adjectives (happy, active, pleased, energetic), negative mood with four adjectives (helpless, nervous, tense, sad), and satisfaction with two adjectives (satisfied, balanced). The implicit well-being score was created by standardizing positive mood, negative mood, and satisfaction, then subtracting negative affect from the sum of positive affect and satisfaction.

### *Results and Discussion*

Preliminary analyses revealed no significant differences in initial explicit and implicit well-being among the three groups. Thus, difference score of initial well-being (Time 1 [T1]) was set to zero and difference scores of well-being Time 2 and Time 3 for each group were computed. Time 2 (T2) difference score of well-being was computed by subtracting T1 well-being score from T2 well-being score. Time 3 (T3) difference score of well-being was computed by subtracting T1 well-being score from T3 well-being score.

Preliminary analyses also revealed no significant difference in perceived interest and frustration among the three groups. In all groups, participants rated the experimental task to be interesting ( $M = 3.13$ ,  $SD = 0.69$ ) and not frustrating ( $M = 1.23$ ,  $SD = 0.43$ ). Similarly, no significant differences in action orientation among the groups were observed. However, because of theoretical implications (Baumann et al., 2004; Brunstein, 2001; Gröpel, 2003b), I controlled for this variable. I did not examine the effect of gender because of the small number of men in each group.

For testing my hypotheses, I used analysis of variance with repeated measures. T2 and T3 difference scores in explicit and implicit well-being were tested as dependant variables, individual differences in action orientation (AOD and AOF) as control variables (covariates). Figure 3.1 presents obtained findings in explicit well-being. Contrary to my expectations, participants with goals discrepant to their needs (Exp. Group 2) did not experience lower well-being than participants in the control group or in experimental group 1

at Time 2. Similarly, participants with behavioral activities (mail tasks) discrepant to their goals (Exp. Group 1) did not experience lower well-being as experimental group 2 in Time 3. They scored lower as control group, but the difference was not significant. Overall, the differences in explicit well-being among the three groups were not significant ( $F = 1.34$ , *ns.*).

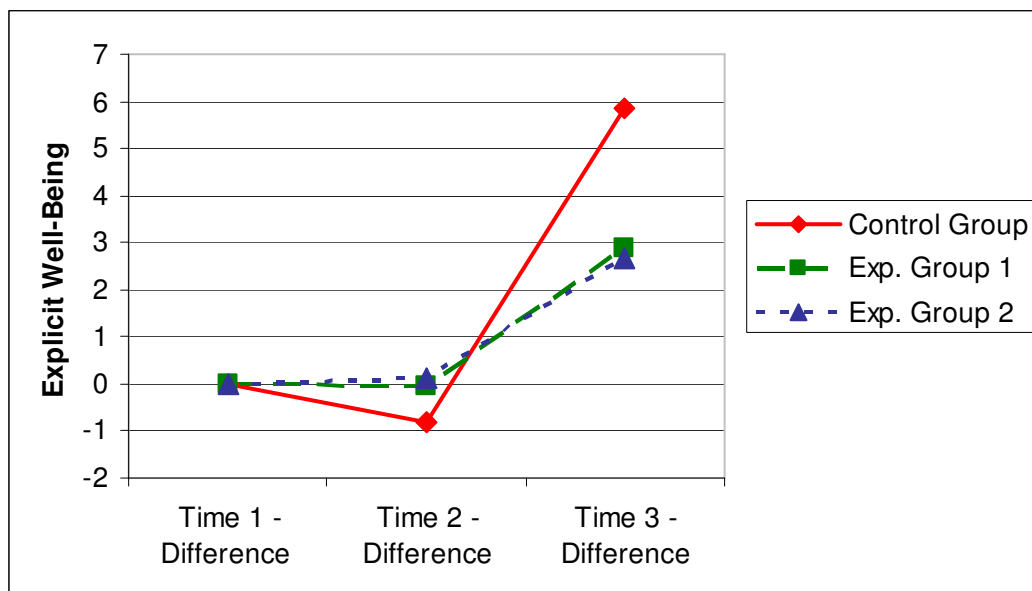


Figure 3.1 Changes in Explicit Well-Being in Control and Experimental Groups.

Figure 3.2 presents the findings in implicit well-being. As expected, participants with goals discrepant to their needs (Exp. Group 2) experienced reduced well-being compared to their initial well-being, and compared to the control group and to experimental group 1 at Time 2. However, these differences were not significant. Participants with behavioral activities discrepant to their goals (Exp. Group 1) experienced lower well-being as both control group and experimental group 2 in Time 3. However, the differences were not significant. Overall, the differences in implicit well-being among the three groups were congruent with the discrepancy hypothesis, but not significant ( $F = 0.50$ , *ns.*). Thus, my findings are in expected direction, but they are not significant. The discrepancy hypothesis could not be supported.

Interestingly, across all groups, both explicit and implicit well-being changed positively after the behavioral activities. This effect was significant for both explicit ( $F = 13.59$ ,  $p < .01$ ) and implicit well-being ( $F = 10.13$ ,  $p < .01$ ). This is in accordance with the general goal attainment hypothesis that progress in attaining goals generally leads to positive changes in well-being (Brunstein, 1993; Emmons, 1986, 1996). Moreover, this effect

was stronger for participants who attained self-concordant goals (i.e., control group) although the between-groups differences were not significant. Investigating the impact of action orientation, it did not significantly interact with the changes in neither explicit nor implicit well-being.

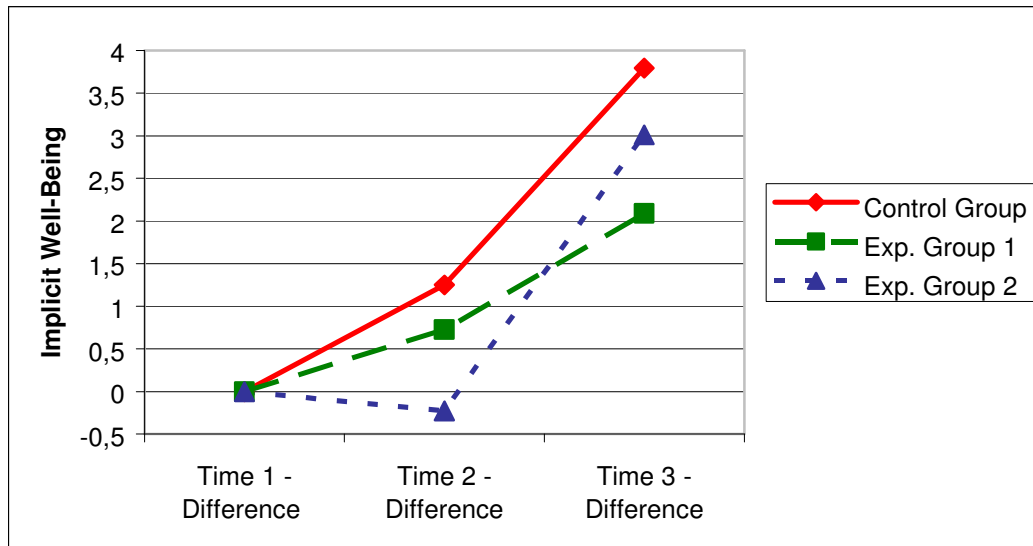


Figure 3.2 Changes in Implicit Well-Being in Control and Experimental Groups.

### General Discussion

The aim of the present research was to address the functional basis of life balance and its impact on well-being. According to the Self-Concordance Model (Sheldon & Elliot, 1999) and PSI theory (Kuhl, 2001), I assumed the congruence of needs, goals and behavior to be a mechanism underlying life balance. Study 1 partly supported this assumption. Participants scoring high in discrepancies among needs, goals and behavior perceived their time as inadequately distributed across main life domains. Further, people who attain goals that reflect their needs, and who spend appropriate time for attaining such goals were expected to experience higher well-being. This hypothesis was also partly supported. In Study 1, high discrepancies among needs, goal orientations and behavior was associated with low levels of both explicit and implicit well-being. However, testing this effect experimentally, I obtained inconsistent results. Nonetheless, in accordance with previous findings (Sheldon & Kasser, 1998; Sheldon & Elliot, 1999), progress on attainment of goals congruent with individual's needs was found to be beneficial for the level of well-being. From a theoretical perspective, this effect must be interpreted carefully: Progress on goals attainment was found to increase well-being although the goals were not congruent with the person's needs or the behavior was not congruent with the goals set (the general

goal attainment hypothesis). Despite the theoretical paradox involved, it can be said that my findings are in concordance with previous findings that attaining goals generally leads to positive changes in well-being (Brunstein, 1993; Emmons, 1986; Sheldon and Elliot, 1999). Examining explicit well-being, the experimental manipulations had no effect on the differences in well-being changes between the groups. The differences in implicit well-being changes were in expected directions (the discrepancy hypothesis), but not significant. Participants who were confronted with goals discrepant to their needs experienced negative changes in implicit well-being when compared with their initial well-being and with participants whose goals were congruent to their needs. Further, participants who worked on the tasks that were discrepant to their goals experienced lower well-being as participants whose behavior was congruent to their goals. Thus, using an implicit measure of well-being, I obtained theoretically expected results (although not significant). These preliminary findings might indicate that, in experiments with relatively short periods of repeated measurements, implicit measures of well-being can be more sensitive to the changes in well-being as the explicit ones. In agreement with Diener and Biswas-Diener (2000), it is helpful to use other (implicit) types of well-being measures additionally to self-report questionnaires in future well-being research.

Why did the experimental manipulations not produce changes in well-being? One possible explanation is that the experimental task did not reflect the participants' everyday life and thus did not simulate a real situation. The topics did not represent real goals that participants realize in their lives. Thus, addressing real-life situations could be more helpful by investigating the congruence of needs, goals and behavior. Further, it is also possible that more time is needed to perceive the negative impact of a discrepancy. The incongruence among needs, goals and behavior can be seen as a long-term stressor that must not necessarily affect well-being immediately. Perhaps a critical level of discrepancy and its duration must be reached in order to feel worse. In addition, participants in all groups rated the experimental task as very interesting and not frustrating. It is also possible, that the experimental task per se had a positive impact on well-being, no matter if there was a discrepant or congruent condition.

Action orientation did not affect the level of well-being in my experiment (Study 2). This can be explained because there were no significant differences in action orientation among the groups. Participants were assigned to the groups randomly, thus no differences in gender, age, action orientation and initial well-being among the group were expected. Although no significant effects of action orientation were observed, I recommend

controlling this variable in future research on congruence and well-being. Need-incongruent goal orientations were found to influence affective states and well-being negatively (Bauman et al., 2004; Gröpel, 2003b). Therefore, experimental manipulations inducing discrepancy between needs and goals are also expected to affect well-being negatively. However, according to Koole and Jostmann (2004), persons high in action orientation are especially skilled at intuitive affect regulation. By such individuals, it can be expected that reduced well-being associated with discrepant situations can be regulated before negative affective states and reduced positive states are consciously perceived. Thus, incongruence is not necessarily related to low well-being, when a person is able to regulate his or her affective states intuitively (Gröpel, 2003b).

Some limitations of the present research should be underscored. First, as noted above, the experimental task did not reflect the participants' everyday life and thus did not simulate a real situation. More real-life situations should be used in future research. Second, only college students were sampled. It is important that future studies test the impact of congruence vs. discrepancy with a more heterogeneous sample. Third, only a small number of persons participated in the experiment. More individuals should be recruited in future research in order to increase variance and statistical power.

To conclude, the present findings provide partial support for the congruence of needs, goals and behavior as the functional basis of life balance and its impact on implicit and explicit well-being. Using projective methods and self-report scales, congruence of needs, goals and behavior was positively related to life balance and both explicit and implicit well-being. Testing the impact of induced discrepancies on well-being experimentally, only effects on implicit well-being were in expected directions (the discrepancy hypothesis), but not significant. My findings support the general goal attainment hypothesis that progress in attaining goals generally leads to positive changes in well-being. However, it would be premature to draw the final conclusions. This research represents a pilot study that might help design future studies for investigating the role of motive-goal or motive-behavior discrepancies on well-being. More research is needed to test and specify expected relations.

**PAPER 4      Maintaining Balance in Life: Impact of Stress and Action Orientation**

*Abstract:* The purpose of this study was to test the moderation effect of state and action orientation on the relationship between life stress and life balance (i.e., balanced distribution of one's time across life domains). It was hypothesized that affective coping (i.e., action orientation) buffers the negative impact of stress on life balance. A hundred and thirty-six persons filled out the questionnaires about perceived life stress, action orientation and life balance. Consistent with expectations, action-oriented individuals were able to maintain their balance as stress increased. State-oriented individuals benefited in pleasant (low stress) situations. However, under high stress, they lost their balance. In sum, action orientation ameliorated the negative impact of stress on life balance.



### Maintaining Balance in Life: Impact of Stress and Action Orientation

Over the last years, issues related to the integration of paid work and the rest of life, often referred to as '*work-life balance*', have become the subject of significant discussion and research. The ability to balance life demands has been found to affect life satisfaction (Fisher, 2002; Gröpel, 2004), marital satisfaction (Barnett, Del Campo, Del Campo, & Steiner, 2003), mental health (Beatty, 1996; Grzywacz & Bass, 2003), and well-being (see e.g., Paper 2). In contrast, failure to achieve balance was associated with a variety of negative consequences including increased stress and somatic complaints, less life satisfaction, decreased job satisfaction and reduced productivity, turnover intentions, family conflicts, marriage breakup, and overall decrease in the quality of life (e.g., Burke, 1988; Grant-Vallone & Donaldson, 2001; Greenhaus, Collins, & Shaw, 2003; Haar, 2004; Kofodimos, 1990; Noor, 2004; Rice, Frone, & McFarlin, 1992). In this research, the problems of balancing life demands are often thought to depend on how people allocate their time across various life roles. Recently, researcher mostly focused on the balance between work and family responsibilities (Hill, Hawkins, Ferris, & Weitzman, 2001). Other authors argue that some additional components are to be taken into account because the work-life system is multi- and not just two-dimensional (Warren, 2004; Seiwert 2000, 2001). Warren (2004), for example, notes that over 170 different life domains have been identified in previous investigations. The major ones include domains of work, financial resources, leisure, dwelling and neighborhood, family, friendships, social participation and health. Seiwert (2000, 2001) distinguishes, apart from work and family, two additional life domains – health and meaningfulness of life – that are important in human life as well. His theory is based on the Nossrat Pesseschkian's intercultural research (in: Seiwert, 2000) that identified four domains as the most important areas of life: (1) work/achievement, (2) social contact/relationships, (3) health/body, and (4) meaningfulness of life. Based on Seiwert's (2000) theoretical approach, life balance is defined in terms of appropriate proportion of time spent in major life domains that comprises of activities related to work, social contact and family, health, and overall meaningfulness of life (see Paper 1).

Under stress, life balance deteriorates (Gröpel, 2003a; Seiwert, 2000, 2001). The scarcity hypothesis (Chapman, Ingersoll-Dayton, & Neal, 1994) has provided a useful framework to understand the problems with stress and appropriate time allocation. This hypothesis assumes a constant amount of time and energy individuals have at their disposal. An increase in roles and responsibilities results in the increased likelihood of role

conflict, stress and overload. Due to this conflict, the total time available can not be distributed appropriately across all life areas. Inappropriate time spending further results in increased conflict and stress. This reasoning suggests the relationships between life balance and stress to be bidirectional. On the one hand, stress is thought to cause the loss of balance (Burke, 1988). On the other hand, failure to achieve balance was predictive for the level of stress (Noor, 2004). In the present study, the first direction was investigated. Previous findings showed that stress and negative affectivity were negatively related to life balance (Fischer, 2002; Bruck & Allen, 2003). In the research reported here I was interested in the question as to whether it is possible to maintain life balance even under stress?

According to Kuhl (2001), stressful life-events can be differentiated into *demands* and *threats*. Life-events that place high demands on a person (e.g., goals conflicts, high task difficulty, role conflict) are associated with reduced positive affect, whereas threatening life events (e.g., danger, major life changes, painful experiences) are associated with increased negative affect. As noted above, stress and negative affectivity were associated with poor life balance. However, stressful life-events – demands and threats – are expected to impair this balance only when a person is not able to cope with these events. Thus, individual differences in coping (i.e., self-regulation of affect) are a potential moderator of the stress-balance relationship to be investigated here. The personality disposition of action versus state orientation captures individual differences in self-regulation under stress that are expected to moderate the influence of stressful life-events on balancing life demands. Action orientation is a general ability to self-regulate affective states under stress (Beckmann & Kuhl, 1984; Koole & Jostmann, 2004; Kuhl, 1994a). There are two major dimensions of action and state orientation: the ability to self-generate positive affect in the face of difficulties and problems has been named as *decision-related action orientation* (AOD) whereas the ability to reduce (downregulate) negative affect after negative events has been called as *failure-related action orientation* (AOF). Conversely, decision-related *state* orientation (SOD or hesitation) is the *inability* to self-generate positive affect resulting from stressful life events involving high demands. Failure-related *state* orientation (SOF) is the *inability* to cope with negative affect. According to the theory of action control (Kuhl, 1994a), AOD is expected to moderate the effect of demands whereas AOF is expected to moderate the effect of threats.

Apart from the affective coping role of action orientation, there is another reason why I expect this personality disposition to act as a buffer against the impact of stress on life balance. According to the Personality Systems Interaction Theory (PSI-theory; Kuhl,

2001), successful coping with negative affect (i.e., failure-related action orientation) activates integrative functions of the right hemisphere which contribute to holistic perceptions of many domains of the internal and external world. Presumably, such holistic perceptions help to simultaneously perceive various demands of life and to balance the time needed for these demands. Further, positive affect facilitates the enactment of intentions and goal attainment (Kuhl & Kazén, 1999). According to these findings, self-generated activation of positive affect (i. e., self-motivation) provides the energy needed for enacting goal-oriented behavior whereas insufficient self-motivation offsets the balance of time-spent in goal-relevant behaviors across different life domains. Therefore, I hypothesize action orientation to buffer the negative impact of stress on life balance: Action orientation will moderate the influence of life stress on life balance.

## Method

### *Participants*

A hundred and thirty-six student volunteers at the University of Osnabrück (94 women and 42 men) participated in the study. Their average age was 24.3 years ( $SD = 4.3$ ). Participants attended a group questionnaire session in which they answered the questionnaires about life balance, life stress and action orientation. It took about twenty minutes to fill out all questionnaires.

### *Measures*

*Life balance*\*. Life balance was measured by using the Life-Balance Checklist (LBC; see Paper 1). In this checklist, the appropriateness of time spent in the most important areas of life is assessed. Previous research supported adequate internal and external validity of the LBC (see Paper 1).

*Action Orientation*. The Action Control Scale (ACS-90; Kuhl, 1994b) was administered to assess action vs. state orientation. Either dimension of action orientation was measured with 12 items. Each of the items describes a stressful situation and an action-

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\* Because of interest in action orientation, which contains components of acting, I focused especially on the behavior/action related component of life balance. Therefore, I refer to findings obtained by the use of the Life-Balance Checklist which is oriented to acting (i.e., spending time). Investigating the situational component of life balance by the use of the Life-Balance Questionnaire (i.e., having time), the results were in expected directions but not significant (AOD x Demands:  $\beta = .13$  ns.; AOF x Threats:  $\beta = .12$  ns.). Investigating the combined score of the LBC and the LBQ (i.e., the total sum of LBC & LBQ), the results were in accordance with expectation and significant (AOD x Demands:  $\beta = .22$ ,  $p < .05$ ; AOF x Threats:  $\beta = .24$ ,  $p < .05$ ).

versus state-oriented way of coping with the situation. For each item, participants were asked to select the response that best described their own reaction to the situation. Action-oriented choices were coded as 1 and state-oriented choices were coded as 0 and summed for the entire subscale. An example item of the decision-related dimension is: “When I know I must finish something soon: (a) I have to push myself to get started, or (b) I find it easy to get it done and over with”. Option *a* reflects the state orientation and option *b* the action orientation response alternative. An example item of the failure-related dimension is: “When I am told that my work has been completely unsatisfactory: (a) I don’t let it bother me for too long, or (b) I feel paralyzed”. Option *a* reflects the action-orientated whereas option *b* reflects the state-orientated response alternative. The ACS has sufficient reliability (Cronbach’s alphas  $> .70$ ) and adequate construct validity (Kuhl & Beckmann, 1994). The factorial structure of the ACS-90 confirms the theoretical distinction made between the AOD and AOF components of action orientation (Diefendorff, Hall, Lord, & Streat, 2000; Kuhl, 1994b). Effects of action orientation have been found across a wide range of different measures and domains, including intentions, physiological arousal, medicine intake, therapeutic outcomes, athletic performance, and work psychology (see e.g., Kuhl & Beckmann, 1994). Thus, action orientation appears to be a global construct that operates over and above domain-specific processes. Moreover, research has established that the effects of action orientation are not due to self-efficacy or control expectations (Bossong, 1999; Kuhl, 1981), achievement motivation (Heckhausen & Strang, 1988), and occur over and above the effects of the Big Five personality dimensions (Brunstein, 2001; Diefendorff et al., 2000). In the present study, AOD and AOF scales had internal consistencies of  $\alpha = .82$  and  $\alpha = .87$ , respectively.

*Life stress.* The Life-Stress Scale adopted from the Volitional Components Inventory (VCI; Kuhl & Fuhrmann, 1998) was administered with the two subscales (demands and threats) consisting of four items each. Example items from the demands scale are: “My current life circumstances are very tough”, and “I must cope with a lot of difficulties”. Example items from the threats scale are: “I have many painful experiences to cope with”, and “I have felt a lot of conflicts and hostility between myself and others lately”. These two types of stressors load on orthogonal factors and show the theoretically expected correlations with low positive affect (the demands scale) and high negative affect for the threats scale (cf. Kuhl, 2001, p.243). Participants responded to each item using a 4-point Likert-type scale from *completely disagree* (0) to *completely agree* (3). In the present study, internal consistence were  $\alpha = .80$  for demands, and  $\alpha = .89$  for threats.

## Results

First, I examined the main effect of gender on all study variables. Two gender differences were found: Men scored higher than women in both demands ( $M = 4.7$  vs.  $M = 2.9$ ,  $F = 13.04$ ,  $p < .001$ ) and threats ( $M = 5.2$  vs.  $M = 3.9$ ,  $F = 5.49$ ,  $p < .05$ ). However, regression analyses established that gender did not interact with any of the effects reported below. Therefore, gender is not discussed further.

Table 4.1 presents the correlations between all variables included. As expected, stress was negatively related to life balance. Both demands and threats were found to be significantly and negatively associated with appropriate time allocation across major life domains. In addition, decision-related action orientation correlated negatively with both demands and threats. Failure-related action orientation was negatively but moderately related to threats.

Table 4.1

*Zero-Order Correlations between Major Study Variables*

Variable	1	2	3	4	5
1. AOD	---				
2. AOF	.45**	---			
3. Demands	-.25**	-.11	---		
4. Threats	-.24**	-.16+	.64**	---	
5. Life Balance	.12	.16+	-.29**	-.30**	---

*Note.* AOD – decision-related action orientation; AOF – failure-related action orientation; +  $p < .10$ ; \*  $p < .05$ ; \*\* $p < .01$ .

To test the moderator hypothesis, a hierarchical regression analysis was conducted on life balance with AOD and demands entered as block 1, and their interaction term entered as block 2. Following a recommendation by Aiken and West (1991), predictor variables were standardized before calculating their interaction term. Dependent variable was standardized as well. There was a significant main effect for Demands ( $\beta = -.28$ ,  $t = -2.99$ ,  $p < .01$ ). More important, there was a significant AOD x Demands interaction ( $\beta = .25$ ,  $t = 2.72$ ,  $p < .01$ ). Nonstandardized regression weights using a range of  $\pm 1$  SD for both predictor variables were used to graph this interaction effect (see Figure 4.1). The relation between demands and life balance varied as a function of prospective action orientation

(AOD), as predicted. Consistent with expectations, state-oriented participants showed substantially poorer life balance as demands increased whereas action-oriented participants were not significantly influenced by demands<sup>\*\*</sup>.

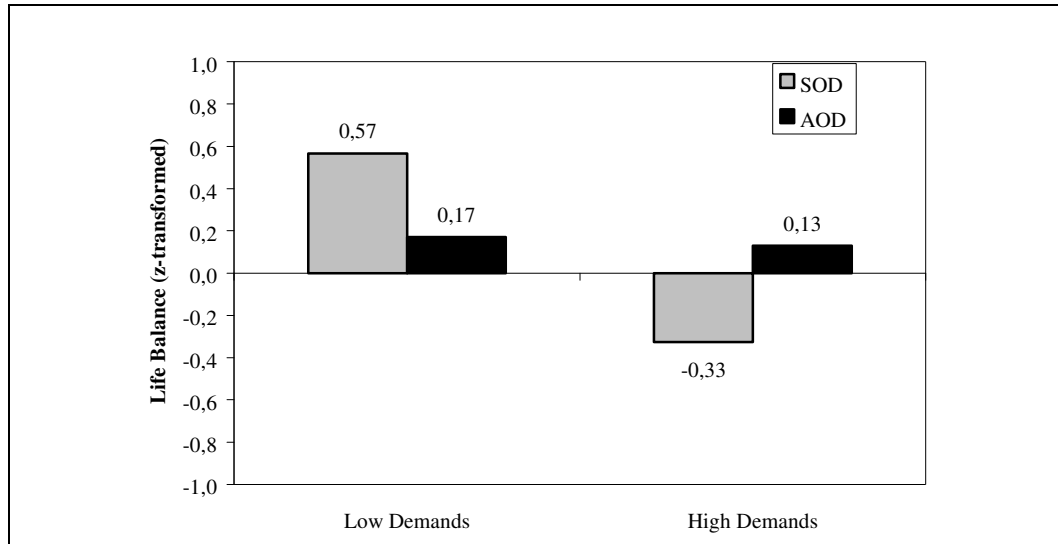


Figure 4.1 The relationship between demands and life balance as a function of decision-oriented state and action orientation.

Similarly, a hierarchical regression analysis was conducted on life balance with AOF and threats entered as block 1, and their interaction term entered as block 2. There was significant main effects for Threats ( $\beta = -.29, t = -3.22, p < .01$ ). More important, there was a significant AOF x Threats interaction ( $\beta = .24, t = 2.74, p < .01$ ). Nonstandardized regression weights using a range of  $\pm 1 SD$  for both predictor variables were used to graph this interaction effect. As illustrated in Figure 4.2, the relation between threats and life balance varied as a function of state and action orientation, as predicted. State-oriented participants scored significantly lower on life balance as threats increased whereas action-oriented participants were not significantly influenced by threats<sup>\*\*\*</sup>. The regression analyses provided support for the hypothesis that the impact of life stress on life balance was moderated by state and action orientation.

<sup>\*\*</sup> Investigating the moderation effect of AOF x Demands, the moderation was also significant ( $\beta = .26, p < .01$ ). This might be due to high correlation between Demands and Threats in this sample ( $r = .64^{***}$ ) as well as to the direct effect of AOF on life balance.

<sup>\*\*\*</sup> Investigating the moderation effect of AOD x Threats, the moderation was not significant ( $\beta = .14 ns$ ).

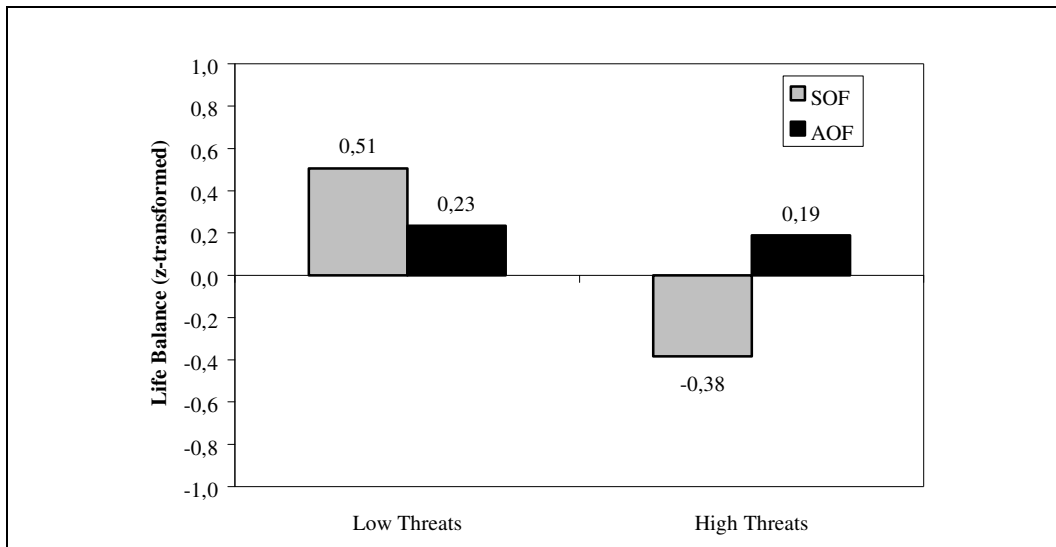


Figure 4.2 The relationship between threats and life balance as a function of failure-oriented state and action orientation.

### Discussion

The purpose of this study was to test the moderating effect of state and action orientation on the relationship between life stress and life balance. The findings supported the expectation that persons having elevated scores in affective coping (i.e., action-oriented individuals) are more able to maintain time-balance under stressful life events. On the other side, state-oriented individuals benefited in pleasant (low stress) situations. They reported increased life balance under supportive conditions. This finding is in line with the theory. As long as external conditions remain pleasant and supportive, state-oriented individuals may be able to function well or even outperform action-oriented individuals, even at complex tasks (Koole, Kuhl, Jostmann, & Vohs, in press). However, with increasing levels of life stress they lose their balance. Thus, consistent with previous theorizing (Kuhl, 1994a), action orientation was found to be beneficial, especially under stressful conditions.

These findings should not be overgeneralized, however. Almost everyone is bound to become state-oriented under extreme stress. This is because extreme amounts of stress may exceed even the affect-regulatory capacity of dispositionally action-oriented individuals. Thus, a particularly high role overload and a very large number of responsibilities might impair life balance independently of coping skills. In other words, whenever external demands exceed a critical level, individual differences in coping are of little relevance. For instance, a mother with six children who is full-time employed and whose husband went on a work journey for some time may lose her time-balance even if she is highly action-

oriented. Hence, individual differences in action versus state orientation are likely to emerge under more moderate conditions of stress.

There are some built-in limitations in my work that should be eliminated in future research. First, the sample was relatively small and consists of students only. However, topics of life balance are not limited to students only (Galinsky, Bond, & Friedman, 1996). Students often have jobs in addition to their studies and some of them are also married or are already parents. It remains to be seen in future research to what extent my findings can be generalized to employees having families. A further limitation relates to the fact that I used self-report measures only. Although self-report scales are often used for testing action orientation and stress (see e.g., Kuhl & Beckmann, 1994), there are other methods that permit more objective testing. For instance, using the Face Discrimination Task (Öhman et al., 2001), Koole and Jostmann (2004) found this method to be a possible objective measure of action orientation. Similarly, the Revised Social Readjustment Rating Scale (Hobson et al., 1998) offers a more objective assessment of stressful life situations. Whether or not my findings can be replicated with objective measures remains an open question.

To conclude, this research reveals some practical implications. Individual differences in coping seem to be an important factor which should be addressed in workplace programs that try to enable employees to effectively balance their life domains. Apart from typically offered programs such as flexible work hours, flexible work place, job sharing, or employee assistance programs (Hobson, Delunas, & Kesic, 2001), training of coping skills should also be taken into account. Integrating external supporting programs with focus on the development of individual coping abilities (e.g., action orientation) could become an effective way to enable people to reach and maintain their balance in life. According to Kästele's (1988) twins study, the genetic component of action orientation was found to be relatively modest. This is in line with PSI theory, which argues that the development of action and state orientation is strongly influenced by socialization experiences (Kuhl, 2001). Moreover, as supported by therapy research (de Jong-Meyer et al., 1999; Hartung & Schulte, 1994; Hautzinger, 1994), it was possible to improve action orientation with therapeutic methods directing the focus of attention from passive cognitions revolving around unpleasant states to more active cognitions focusing on opportunities for future action. Thus, action orientation seems to be a factor which could be effectively addressed in life-balance supporting programs.



PAPER 5      **Antecedents of life balance: The role of time management and self-regulation competences**

*Abstract:* The purpose of this research was to investigate whether time management behavior and basic self-regulatory competencies (self-motivation, self-relaxation, and self-determination) influence life balance, that is, the balanced distribution of time available across life domains. In two separate studies, time management behavior was found to have a positive impact on life balance through improved perception of control over time and reduced procrastination. Moreover, the goal setting/prioritizing dimension buffered the negative impact of stress on balancing life domains. Self-motivation and self-relaxation were found to lead to life balance indirectly through self-determination. In line with theory, persons especially skilled in self-motivation and self-relaxation reported to high competence to choose and attain self-concordant goals and, thus, to balance their time spent across life domains more effectively.

## Antecedents of life balance: The role of time management and self-regulation competences

Managing the integration of life demands is a critical challenge facing most people. In recent years, much has been written about the importance for individuals to balance their life activities. Failure to balance life demands was found to be related to a variety of serious negative consequences for both individuals and organizations, including increased stress and somatic complaints, reduced productivity, turnover intentions, family conflicts, marriage breakup, and overall decrease in the quality of life. Whereas the importance and outcomes of life balance has been well-documented, little research has focused on personality antecedents that influence this balance and could be trained. Therefore, the purpose of this study is to address some personality competences that presumably affect life balance.

The problems of balancing life demands are often thought to depend on how people allocate their time across various life roles. In recent years, researchers mostly focused on the balance between work and family responsibilities. The approach of life balance was initially conceived of in terms of work-family balance (e.g., Hill, Hawkins, Ferris, & Weitzman, 2001) or work-family conflict (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). However, the work-life system is multi- and not just two-dimensional (Warren, 2004; Seiwert 2000, 2001). Warren (2004), for example, notes that over 170 different life domains have been identified in previous investigations. The major ones include domains of work, financial resources, leisure, dwelling and neighborhood, family, friendships, social participation and health. Seiwert (2000, 2001) distinguishes, apart from work and family, two additional life domains – health and meaningfulness of life – that are important in human life as well. His theory is based on the Nossrat Pesseschkian's intercultural research (in: Seiwert, 2000) that identified four domains as the most important areas of life: (1) work/achievement, (2) social contact/relationships, (3) health/body, and (4) meaningfulness of life. According to Seiwert, all these areas of life are closely related to each other. This means, that neglecting or inappropriately preferring one life area will have an impact on other areas. For example, spending too much time and energy for work could lead to health problems (e.g., somatic complains, infarct, sleeping disorders), conflicts in the family (e.g., with one's partner), and also to dissatisfaction and alienation (the work doesn't provide personal meaning any longer). The result, then, is the loss of energy and motivation for work, and less work effectiveness. On the other hand, spending too little time and energy for work usually leads to problems at the workplace and loss of employment which

could also affect other life areas (e.g., stress, depression, existential problems, family problems, less self-actualization). Based on Seiwert's (2000) theoretical approach, life balance is defined in terms of appropriate proportion of time spent in major life domains that comprises of activities related to work, social contact and family, health, and overall meaningfulness of life (see Paper 1).

### *Outcomes of Life Balance*

There are several important personal outcomes that have been identified in previous research. The ability to balance life demands has been found to affect life satisfaction (Fisher, 2002; Gröpel, 2004), marital satisfaction (Barnett, Del Campo, Del Campo, & Steiner, 2003), mental health (Grzywacz & Bass, 2003), and well-being (see e.g., Paper 2). In contrast, failure to achieve the balance was associated with serious negative consequences such as increased stress and somatic complaints (Burke, 1988; Chapman, Ingersoll-Dayton, & Neal, 1994; Googins, 1991), depression (Beatty, 1996; Googins, 1991), greater likelihood of alcohol abuse (Grzywacz & Bass, 2003; Frone, Russel, & Cooper, 1993), less life satisfaction and overall decrease in the quality of life (Adams, King, & King, 1996; Arye, 1992; Grant-Vallone & Donaldson, 2001; Greenhaus, Collins, & Shaw, 2003; Noor, 2004; Rice, Frone, & McFarlin, 1992), decrease in the quality of family life, family conflicts and marriage breakup (Bolger, DeLongis, Kessler, & Wethington, 1989; Crouter, Bumpus, Head, & McHale, 2001; Crouter, Perry-Jenkins, Huston, & Crawford, 1989; Higgins, Duxbury, & Irving, 1992; Frone et al., 1993; Kofodimos, 1990), decreased job satisfaction and reduced productivity (Burke, 1988; Frone, Russell, & Cooper, 1992; Higgins et al., 1992; Rodgers & Rodgers, 1989; Thomas & Ganster, 1995), greater likelihood of leaving the company (Galinsky & Johnson, 1998; Haar, 2004), and increased absenteeism (Goff, Mount, & Jamison, 1990). This research evidence strongly indicates the importance of balancing life domains. Thus, questions of how to reach that balance merit scientific attention.

### *Antecedents of Life Balance*

Conflict among various life responsibilities occurs when individuals have to perform multiple roles. Role theory has provided a useful framework to understand how men and women attempt to balance multiple roles. Within role theory, the scarcity hypothesis (Chapman, Ingersoll-Dayton, & Neal, 1994) proposes that individuals have limited time and energy. Occupying multiple roles creates interrole conflict, role overload and stress.

Within this conflict, the time available cannot be spent appropriately across all life areas and, hence, life balance is impaired. Previously, researchers have tried to identify factors that help to overcome role overload and stress and to facilitate balancing life domains. For example, I found affective coping (i.e., action orientation) to buffer the negative impact of stress on life balance (see Paper 4): Action-oriented individuals were better able to maintain life balance under stressful life events. Further, in time management research, role overload was negatively associated with time management factors such as preference for organization (Jex & Elacqua, 1999) and perceived control over time (Jex & Elacqua, 1999; Macan, Shahani, Dipboye, & Phillips, 1990). In Jex's and Elacqua's study, the two time management factors were significantly related to work-family balance.

Personality characteristics in relation to life balance were also studied. Kossek, Noe and DeMarr (1999) assumed conscientiousness to be related to work-family synthesis. This hypothesis was supported in a recent study (Bruck & Allen, 2003). In addition, agreeableness was related to work-family balance (Bruck & Allen, 2003) and moderated the relationships between work-family conflict and marital satisfaction (Kinnunen, Vermulst, Geris, & Mäkikangas, 2003). However, Fallon (2003) found none of the Big Five variables to predict work-life balance. In their motivational model, Senécal, Vallerand and Guay (2001) found motivation toward work and family activities to predict less family alienation and work-family conflict. In addition, feeling valued by one's partner and supported by one's employer had an indirect positive effect on work-family balance. Similarly, Burke (1988) found social support to be strongly correlated with work-family balance. Thus, major antecedents of life balance include the negative impact of stress and role overload whereas self-regulation skills can help to cope with this stress and overload to some extent. Social support and motivational aspects similarly appear to be important factors.

### *Focus of the Present Research*

The present research was designed to investigate the impact of self-regulation on life balance. I chose time management behavior and several other self-regulation competences because of two reasons. First, self-regulation skills are not stable personality characteristics and, hence, can be developed and trained. Thus, they are relevant for practical applications. Second, good time management is often thought to overcome stress and influence life balance (e.g., Seiwert, 2000). Time management behavior is viewed as a form of active coping (Carver, Scheier, and Weintraub, 1989; Leiter, 1991; Misra & McKean, 2000) that may buffer the negative effects of multiple or conflicting life demands. How-

ever, there is only little research that investigated the role of time management for balancing life demands. Time management is defined as the self-controlled attempt to use time in a subjectively efficient way to achieve outcomes (Koch & Kleinmann, 2002). According to Lakein (1973), time management behavior includes activities such as setting goals and prioritizing tasks, planning and scheduling, organizing the work space, attaining goals and controlling. In developing a measure of time management, Macan et al. (1990) found three time management factors consistent with Lakein's description: (1) the setting of goals and priorities, (2) the mechanics of time management, and (3) a preference for organization. Goal setting and prioritization simply involves deciding what is most important and what a person wants to accomplish each day. The mechanics of time management include features such as making 'to do' lists and plans. Finally, the preference for organization involves having an organized, methodical approach to work. Engaging more frequently in the three time management factors (behaviors) should lead to a greater perception of control over time (Macan, 1994). In her time management model, she proposed that time management behaviors are not linked directly to outcomes such as stress, job satisfaction and performance, but instead operate through perceived control over time. Only if time management behaviors provide an individual with the perception that he or she has control over time will the outcomes be manifested. According to this model, the three time management factors should lead to perceived control over time which should be further linked to improved life balance. This was partly supported in Jex's and Elacqua's study (1999), where perceived control over time provided the strongest effect on work-family balance. The preference for organization was also positively and significantly linked to the balance, whereas no effect was obtained for goal setting and the mechanics of time management.

Two studies are presented that address the importance of self-regulation competences. In Study 1, paths based on Macan's (1994) time management model are tested. In Study 2, self-regulation competences such as self-determination, self-motivation, and self-relaxation are included apart from time management behavior. Interactions between these self-regulation skills and time management behavior are examined.

### Study 1

The objective of Study 1 was to test the role of time management in facilitating the allocation of appropriate amounts of time across life domains. According to Macan's model (1994), the three time management factors were hypothesized to lead to increases in perceived control over time, and control over time was expected to be linked to life bal-

ance. In addition, the moderator effect of time management behavior in the relationship between life stress and life balance was tested. As noted above, time management can be viewed as a form of active coping (Carver et al., 1989; Leiter, 1991). Thus, one way to reduce the impact of stress is to manage one's time more effectively. Each of the three forms of time management behaviors described by Macan et al. (1990) may buffer the effects of life stress. By setting goals and prioritizing, an individual clarifies which tasks are most important. Hence, if conflicting life demands were to occur, such a person would be able to decide which of the conflicting demands needed the most attention. Further, behaviors associated with the mechanics of time management and preference for organization may buffer the effect of stress because well organized person who put down the tasks that should be done may be more able to successfully meet the demands of various life domains. Therefore, it was hypothesized that all three time management behaviors buffer the negative impact of life stress on life balance.

### *Method*

#### *Participants and Procedure*

Fifty-three undergraduate students (46 women, 7 men) voluntarily completed the questionnaires about life balance, time management, perceived control over time, and life stress. Their mean age was 22.2 years (range 18 to 33 years). All questionnaires were filled out during a large group questionnaire session. Approximately two weeks after, feedback about their time management behavior was sent to participants via e-mail.

#### *Measures*

*Life balance.* Life balance was measured by using two self-report scales. First, the Life-Balance Checklist (*LBC*; see Paper 1) was administered to assess the appropriateness of time spent in the most important areas of life. This scale assesses the proportion of time allotted to various life areas. Measured is the degree to which a person believes he or she spends appropriate amounts of time in each of the following life areas: work/achievement, social contact/relationships, health/body, and meaningfulness of life. Second, I used the Life-Balance Questionnaire (*LBQ*; see Paper 1) which assesses perceived sufficiency of time available for the four areas of life. Previous research supported adequate internal and external validity of the *LBC* and the *LBQ* (see Paper 1).

*Time Management Behavior.* Time management behavior was measured with the Time Management Behavior Scale (TMB), a multi-dimensional 33-item scale developed by Macan et al. (1990). Three subscales correspond to the dimensions of time management behavior proposed by Macan et al. (1990): (1) Goal setting/prioritization (e.g., “I finish top priority tasks before going on to less important ones”), (2) Mechanics of time management (e.g., “I schedule activities at least a week in advance”), and (3) Preference for organization (e.g., “At the end of the workday I leave a clear, well-organized workspace”). Participants responded to each item using a 5-point Likert-type scale from *seldom true* (1) to *very often true* (5). Negatively worded items were scored reversely. Higher mean scores indicated more frequent use of time management. The dimensionality of TMB has been supported through both exploratory (Macan, 1994) and confirmatory factor analysis (Adams & Jex, 1997). Macan (1994) also reported that self-ratings on this scale converged well with co-worker ratings which supports the construct validity of the measure. In the present study, the coefficient alpha for the Goal Setting/Prioritization subscale was .72, for the Mechanics of Time Management subscale was .82, and for the Preference for Organization subscale was .67.

*Perceived Control over Time.* Five items assessing the perceived control over time were taken from Macan et al. (1990). The items were: “I feel in control of my time”, “I find it difficult to keep to a schedule because others take me away from my work” (R), “I underestimate the time that it would take to accomplish tasks” (R), “I must spend a lot of time on unimportant tasks” (R), and “I find myself procrastinating on tasks that I don’t like but that must be done” (R). Responses were made using the same 5-point Likert scale used for time management behavior. Negatively worded items were reverse scored. Higher mean scores indicated greater perception of control over time. In the present study, the coefficient alpha for this scale was .65.

*Life Stress.* The Life-Stress Scale adopted from the Volitional Components Inventory (VCI; Kuhl & Fuhrmann, 1998) was administered with two subscales (demands and threats) consisting of four items each. Example items from the demands scale are: “My current life circumstances are very tough”, and “I must cope with a lot of difficulties”. Example items from the threats scale are: “I have many painful experiences to cope with”, and “I have felt a lot of conflicts and hostility between myself and others lately”. Participants responded to each item using a 4-point Likert-type scale from *completely disagree* (0) to *completely agree* (3). The overall life stress score is a sum of all items. In the present study, internal consistence was  $\alpha = .83$ .

### Results

A total Life Balance score was computed by summing up the scores of the Life-Balance Checklist and the Life-Balance Questionnaire. Both specific effects of either life balance measure as well as their combined effect was examined. Table 5.1 presents the correlations between all variables included. As expected, perceived control over time was positively associated with life balance as well as with time management dimensions. Further, no time management factor was directly related to life balance. Thus, I tested the hypothesized impact of time management behaviors on life balance using structural equation modeling (SEM). I used AMOS-5 (Arbuckle & Wothke, 1999; Arbuckle, 2003) for performing this analysis. As can be seen in Figure 5.1, two of the three hypothesized paths between individuals' time management behaviors and perceived control over time were statistically significant – those involving goal setting/prioritizing and preference for organization. Engaging more frequently in the mechanics of time management was unrelated to the perception of control over time. Macan (1994) and Jex and Elacqua (1999) found a similar findings where the mechanics of time management were unrelated to the perception of control over time.

Table 5.1

*Study 1: Zero-Order Correlations between All Study Variables*

Variable	1	2	3	4	5	6	7
1. Life-Balance Checklist	---						
2. Life-Balance Questionnaire	.31*	---					
3. Life Balance total	.63**	.94**	---				
4. Goal Setting/Prioritizing	.07	-.03	.01	---			
5. Mechanics of time management	.01	-.17	-.14	.46**	---		
6. Preference for organization	-.03	-.09	-.09	.55**	.37**	---	
7. Control over Time	.40**	.30*	.39**	.56**	.19	.57**	---
8. Life Stress	-.40**	-.31*	-.39**	-.03	-.02	-.09	-.25+

Note. + p < .10; \* p < .05; \*\*p < .01.

As hypothesized, perceived control over time was related to life balance. Individuals who perceived themselves as having control over their time reported higher balance in life than did individuals who did not perceive themselves as having much control over their



time. To evaluate the overall fit of the model, I examined the chi-square statistic as well as the goodness-of-fit index (GFI), the fit statistic recommended by Jöreskog and Sörbom (1993); the normed fit index (NFI), which has long been popular in the SEM literature (Tanaka, 1987); and the comparative fit index (CFI), which can correct for the NFI's tendency to underestimate fit in small samples. According to Homburg and Baumgartner (1995), the chi-square statistic should not be significant, and the relative chi-square ( $\chi^2/df$ ) should be 2.5 or less. Values of the fit indexes GFI, NFI and CFI close to 1 indicate a very good fit of a model and should not be less than 0.9, as noted in the AMOS manual (Arbuckle & Wothke, 1999). Respecting these conventional criteria, the model fitted the data:  $\chi^2(6, N = 53) = 11.81, p > .05, \chi^2/df = 1.97$ ; GFI = .93, NFI = .85, CFI = .91. Only the NFI was less than 0.9 what can be caused by the small number of participants in my sample. However, the CFI, which can correct for the NFI's tendency to underestimate fit in small samples, satisfied the conventional criteria. In summary, relatively good support was found for the hypothesized impact of time management on life balance.

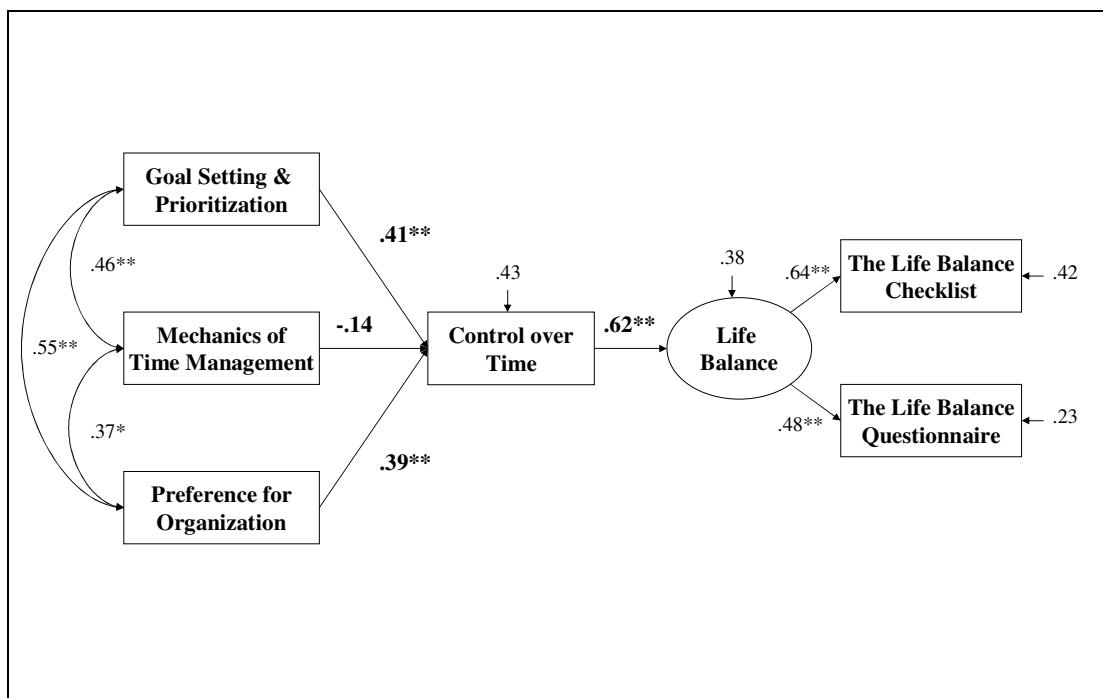


Figure 5.1 Path coefficients for the proposed model of the impact of time management on life balance. \*  $p < .05$ ; \*\* $p < .01$ .

As a next step, I examined the coping role of time management behavior. As shown in Table 5.1, none of time management dimensions was significantly related to life stress. Thus, I investigated moderator effects of time management behaviors in the relationship between life stress and life balance. A hierarchical regression analysis was conducted on

life balance (i.e., total score of life balance) with one of the three dimensions of time management behavior and stress entered as block 1, and their interaction term entered as block 2. This resulted in three separate moderator tests. Following a recommendation by Aiken and West (1991), predictor variables were standardized before calculating their interaction term. The dependent variable was standardized as well. Regression results indicated that only the goal setting/prioritizing dimension moderated the impact of life stress ( $\Delta R^2 = .10$ ,  $p < .05$ ). There was a significant Goal Setting/Prioritizing x Stress interaction ( $\beta = .36$ ,  $t = 2.40$ ,  $p < .05$ ). Nonstandardized regression weights using a range of  $\pm 1$  SD for both predictor variables were used to graph this interaction effect (see Figure 5.2). Testing the moderating effect separately for the LBC, and separately for the LBQ, I obtained similar results. The relation between life stress and life balance varied as a function of goal setting, as predicted. Consistent with expectations, participants who reported low levels of goal setting and prioritization showed substantially poorer life balance as life stress increased whereas participants with high levels of goal setting and prioritizing were not significantly influenced by life stress. Contrary to expectations, the moderating effects of mechanics of time management and of preference for organization were not significant.

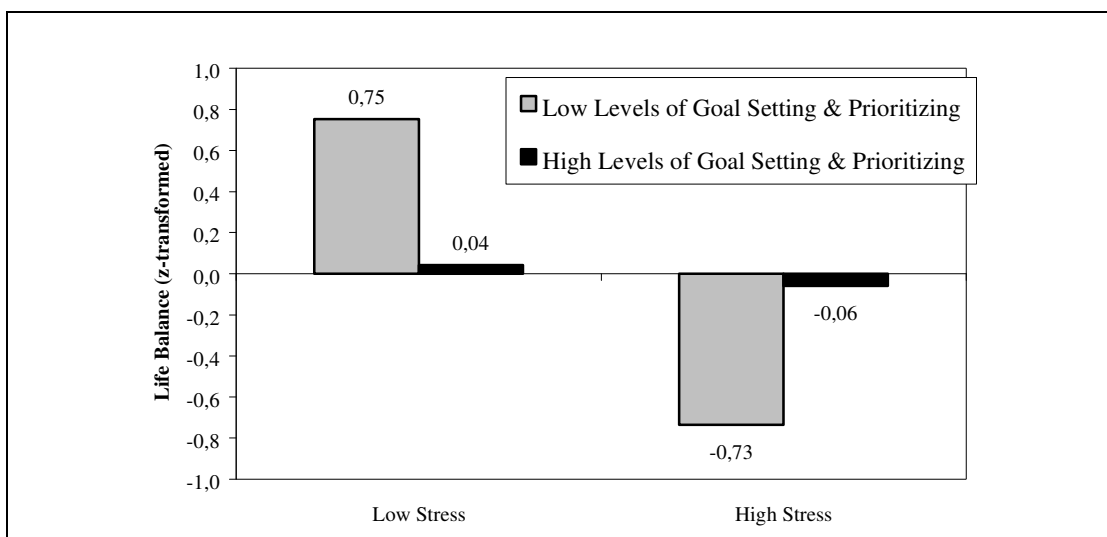


Figure 5.2 The relationship between life stress and life balance as a function of goal setting and prioritizing.

### Brief Discussion

The results of Study 1 are consistent with theoretical suggestions that engaging in time management behaviors may have a positive impact on life balance (Seiwert, 2000). Two dimensions of time management behavior – goal setting/prioritizing and having a

preference for organization – were found to have beneficial effects if they give individuals the perception that they have control over their time. Moreover, setting goals and priorities was especially beneficial in high stress situations. Contrary to expectation, however, participants in Study 1 who practiced time management behavior such as making lists, plans, and scheduling activities did not necessarily perceive greater control over time and maintain their life in balance. According to Macan (1994), it may be that making lists provides people with objective feedback concerning their progress on duties or tasks. When a person does not complete the tasks listed, the perception of having little control over how time is spent may result. Thus, simply making lists more frequently may not be beneficial for everyone. Besides, additional skills may be needed for perceiving the benefits of making plans. For example, in order to follow the activities listed, one should motivate oneself to work on the tasks, particularly if the tasks are not pleasant ones. Similarly, if an individual perceives emotional tension, he or she may not be able to progress successfully on activities listed and, hence, he or she may fail to balance his or her own life effectively. Thus, in addition to making lists, competences related to motivation and reduction of internal tension may be needed in order to balance one's own life adequately. In Study 2, some of these suggestions are examined.

## Study 2

In Study 2 I focused on self-regulation competences such as self-determination, self-motivation and self-relaxation as well as on time management behavior. Self-motivation and self-relaxation are thought to be basic competences of self-regulation (Kuhl, 2001). *Self-motivation* is defined as the generation of positive affect associated with a goal or an activity on the basis of activation of appropriate self-representations (e.g., values associated with the activity; Kuhl, 2000). This means, once a goal corresponds to one's self-representations, positive affect can be generated. Such affect generation provides the organism with behavioral energy (Ashby, Isen, & Turken, 1999), and 'motivate' a person to attain the goal. Moreover, facing an unpleasant task or activity, the mechanism of self-motivation activates the self (based on autobiographical memory) in search for some positive contents that may increase motivation for the task. *Self-relaxation* is the downregulation of negative affect and internal tension through the activation of the self (Kuhl, 2001). In a stress or tension situation, the mechanism of self-relaxation helps one to become 'relaxed' without avoiding unpleasant aspects of the situation, that is, through putting the unpleasant aspects in a context of positive or meaningful experiences (e. g., "I feel sad now,

but I have recovered from this mood so many times”). After restoring the relaxed state, activities, tasks and life demands can be better perceived, decisions can be better made, and goal oriented behavior can be activated. The mechanisms of self-motivation and self-regulation can be also viewed as a motor of self-determination and other self-regulatory competences (Kuhl, 2001). *Self-determination* represents the ability to choose and perform self-concordant goals, tasks and activities (e.g., goals that reflect person’s authentic needs, interests and values). In recent research, attainment of self-concordant goals was found to influence life balance (see Paper 3), to satisfy person’s needs and to increase well-being (Baumann, Kaschel, & Kuhl, 2004; Sheldon & Ellion, 1999; Sheldon & Kasser, 1998). In Paper 3 I assumed and partly supported the congruence of needs, goals and behavior (i.e., attainment of self-concordant goals) to be a functional mechanism underlying life balance. Therefore, a high level of self-determination is supposed to be associated with a good balance of life domains. Based on Kuhl’s functional approach to self-regulation, I expect self-motivation and self-relaxation to facilitate self-determination. Further, I expect self-motivation and self-relaxation to be directly or indirectly (through self-determination) related to life balance.

Apart from self-motivation, self-relaxation and self-determination, I examined time management skills such as making lists (i.e., mechanics of time management), concentration and overcoming procrastination. *Concentration* is the ability to avoid disturbing external and internal stimuli when performing tasks and activities. *Procrastination*, a characteristic often studied in time management research, is tantamount to a failure to enact an intention (e.g., repeatedly putting off the necessary preparation for a test). Putting off important activities may reduce life balance. Thus, I hypothesize procrastination to be directly related to life balance. Concentration and making lists/scheduling are often assumed to help overcome procrastination (Lakein, 1973; Mackenzie, 1988). Therefore, I expect indirect effect of scheduling and concentration on life balance mediated through procrastination.

In Study 1, I found mechanics of time management (i.e., making lists/scheduling) to be unrelated to control over time and life balance. As discussed earlier, competences related to motivation and reduction of internal tension may be helpful for balancing life domains. Moreover, they might moderate the relationship between scheduling and life balance. In order to perceive benefits of making lists, one should motivate oneself to work on the tasks listed, particularly if the tasks are not pleasant ones. Similarly, if an individual perceives emotional tension, he or she may not be able to progress successfully on activi-

ties listed and, hence, he or she may fail to balance his or her own life effectively. Therefore, I assume self-motivation and self-relaxation to moderate the relationship between making lists and life balance.

### *Method*

#### *Participants and Procedure*

The sample comprised 73 undergraduate volunteers (51 women, 22 men). Their mean age was 24.5 years (range 19 to 40 years). Participants filled out the questionnaires about life balance, self-regulation competences and time management behavior during a large group questionnaire session. Approximately two weeks after, feed-back about self-regulation competences and time management behavior was sent to participants via e-mail.

#### *Measures*

Assessment of life balance was the same as in Study 1. For assessing self-regulation and time management behavior, participants filled out the relevant subscales adopted from the Volitional Components Inventory (VCI; Kuhl & Fuhrmann, 1998). This 190-items self-report instrument decomposes self-regulation in up to 40 competences. Only the scales relevant to my research questions were administered. Participants responded to all items using a 4-point Likert-type scale from *completely disagree* (1) to *completely agree* (4).

*Self-Motivation.* The level of self-motivation was assessed with the Self-Motivation subscale adopted from VCI. Example items on this scale are: “I am capable of finding the pleasant aspects of an initially unpleasant activity”, and “I can think cheerful thoughts as a way to motivate myself”. As assessed by coefficient alpha, the reliability of this subscale was  $\alpha = .82$ .

*Self-Relaxation.* The Self-Relaxation subscale adopted from VCI was administered. Example items on this scale are: “I can reduce my tension level, if it becomes disturbing”, and “I can rapidly relax myself even when I am in a state of strong internal tension”. In the present study, the coefficient alpha for this subscale was .84.

*Self-Determination.* The Self-Determination subscale was administered. Example items on this scale are: “I feel that most of the time I really want to do the things I do”, and

“In doing what I do, I feel it was me who chose to do it”. The coefficient alpha for this subscale was .76.

*Making Lists/Scheduling.* The Scheduling subscale adopted from VCI was administered. Example items on this scale are: “When I have a lot of tasks to work on, I make a list and determine the order in which I will perform these tasks”, and “I make a plan before beginning with a long-term or difficult task”. The coefficient alpha for this subscale was .81.

*Procrastination.* The Procrastination subscale was administered. Example items on this scale are: “I postpone many things which I have to do”, and “I often finish unpleasant tasks only at the last minute”. The coefficient alpha for this subscale was .80.

*Concentration.* The Weakness in Concentration subscale was administered. Example items on this scale are: “When I want to concentrate on something my thoughts often wander”, and “It often happens to me that I cannot resist a sudden impulse”. For my research purpose, the subscale score was reverse scored (i.e., high score represents high level of concentration skill). The coefficient alpha for this subscale was .90.

### Results

As in Study 1, a total Life Balance score was computed by summing up the scores of the Life-Balance Checklist and the Life-Balance Questionnaire. Both specific effects of either life balance measure as well as their combined effect were examined. Table 5.2 presents the correlations between life balance and self-regulation competences.

Table 5.2

*Study 2: Intercorrelations between Major Study Variables*

Variable	Life-Balance Checklist	Life-Balance Questionnaire	Life Balance total
Self-Determination	.30*	.35**	.39**
Self-Motivation	.19	.13	.18
Self-Relaxation	.13	.13	.16
Making Lists/Scheduling	.18	.15	.19
Procrastination	-.21+	-.30*	-.32**
Concentration	.22+	.18	.23*

Note. +  $p < .10$ ; \*  $p < .05$ ; \*\* $p < .01$ .

Only self-determination, procrastination, and partly concentration were significantly associated with life balance. Correlation coefficients between remaining competences and life balance were in expected direction, but not significant. Therefore, I examined their indirect effect according to the hypotheses. Figure 5.3 shows a SEM model presenting the impact of the self-regulation competences studied on life balance. All hypothesized path coefficients were significant. As assumed, self-motivation and self-relaxation affected life balance indirectly through self-determination. Similarly, making lists/scheduling and concentration influenced procrastination negatively (i.e., protected one from procrastinating), and as a result affected life balance. Respecting the conventional criteria, the model showed a satisfactory fit:  $\chi^2(17, N = 73) = 23.80, p > .05, \chi^2/df = 1.40$ ; GFI = .93, NFI = .88, CFI = .95. The NFI was less than 0.9 what can be caused by the small number of participants in my sample. However, the CFI, which can correct for the NFI's tendency to underestimate fit in small samples, satisfied the criteria.

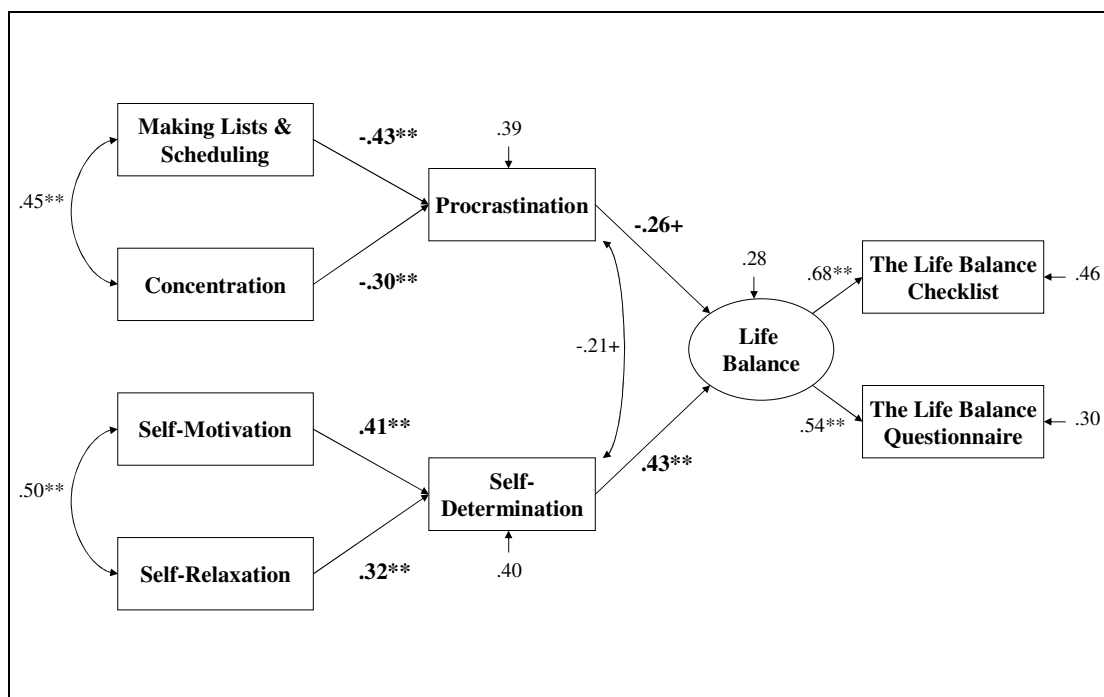


Figure 5.3 Impact of self-regulation competences on life balance: SEM model.  $+p < .10$ ;  $*p < .05$ ;  $**p < .01$ .

Further, I investigated the moderating effects of self-motivation and self-relaxation in the relationship between mechanics of time management (i.e., making lists/scheduling) and life balance. A hierarchical regression analysis was conducted on life balance with self-motivation and making lists/scheduling entered as block one, and their interaction term entered as block two. Following a recommendation by Aiken and West (1991), predictor

variables were standardized before calculating their interaction term. The dependent variable was standardized as well. Regression analysis revealed a significant moderating effect ( $\Delta R^2 = .04, p < .10$ )\*. There was a significant Self-Motivation x Making Lists/Scheduling interaction ( $\beta = -.21, t = -1.81, p < .10$ ). Nonstandardized regression weights using a range of  $\pm 1$  SD for both predictor variables were used to graph this interaction effect (see Figure 5.4). Testing the moderating effect separately for the LBC and the LBQ, I obtained similar results. The relation between mechanics of time management and life balance varied as a function of self-motivation. Participants who reported low levels of scheduling and self-motivation showed substantially poorer life balance. Mechanics of time management were found to be beneficial especially for individuals with low self-motivation competence.

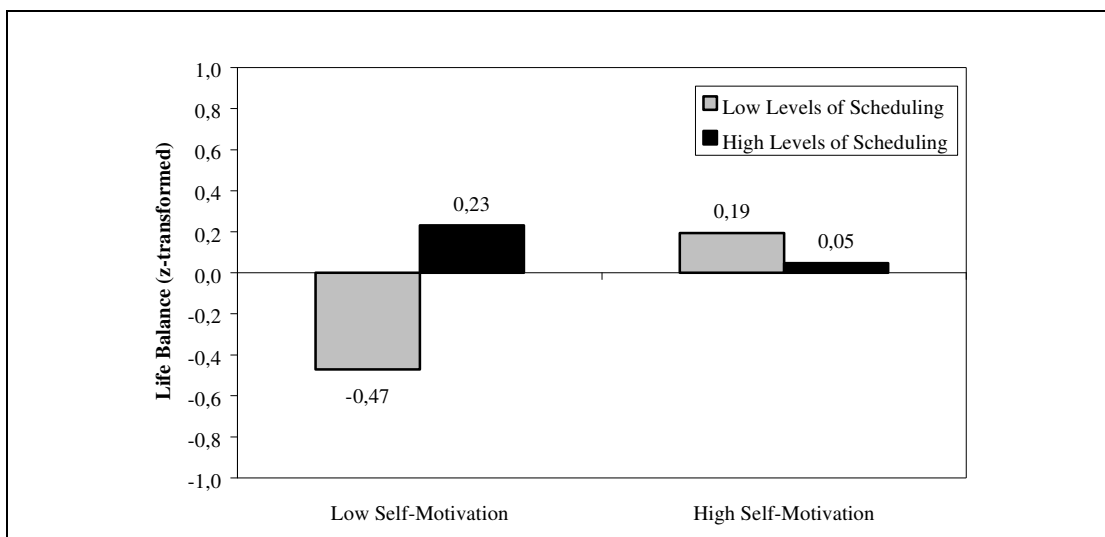


Figure 5.4 The relationship between mechanics of time management (i.e., making lists/scheduling) and life balance as a function of self-motivation.

Similarly, a hierarchical regression analysis was conducted on life balance with self-relaxation and making lists/scheduling entered as block one, and their interaction term entered as block two. Regression analysis revealed a significant moderating effect ( $\Delta R^2 = .10, p < .01$ ). There was a significant Self-Relaxation x Making Lists/Scheduling interaction ( $\beta = -.32, t = -2.81, p < .01$ ). Nonstandardized regression weights using a range of  $\pm 1$  SD for both predictor variables were used to graph this interaction effect (see Figure 5.5). Testing the moderating effect separately for the LBC, and separately for the LBQ, I obtained similar results. The relation between mechanics of time management and life balance varied as a function of self-relaxation. Participants who reported low levels of sched-

\* Given the low power associated with moderated multiple regression (Aguinis & Stone-Romero, 1997), moderator effects that were significant beyond the .10 level were interpreted.



uling and self-relaxation showed substantially poorer life balance. Mechanics of time management were found to be beneficial especially by individuals with low self-relaxation competence. In contrast, participants high in self-relaxation did not necessary need to use scheduling in order to maintain life balance.

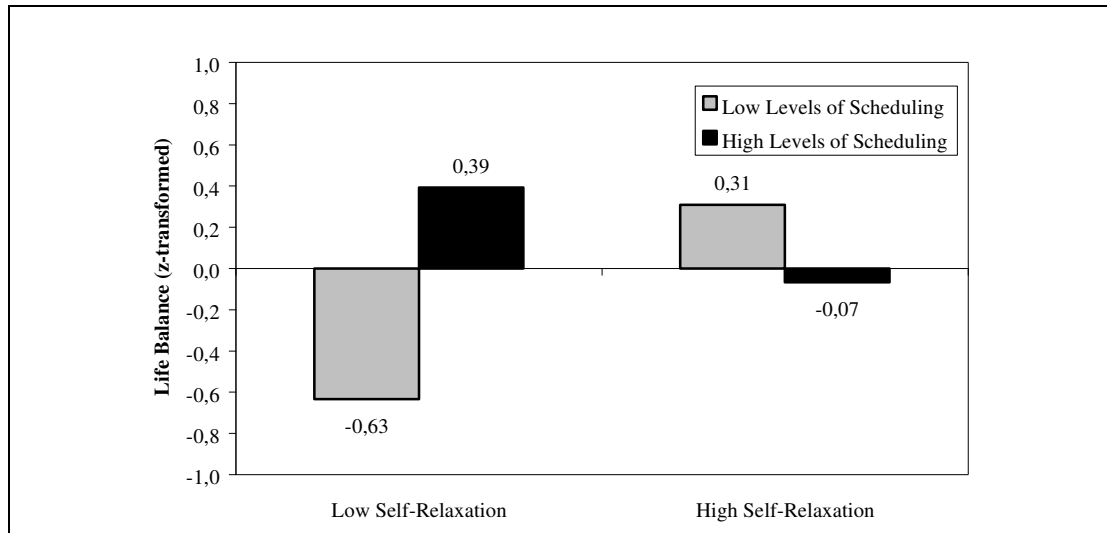


Figure 5.5 The relationship between mechanics of time management (i.e., making lists/scheduling) and life balance as a function of self-relaxation.

### *Brief Discussion*

Study 2 replicated the finding from Study 1 that making lists and scheduling (i.e., mechanics of time management) is not directly related to life balance. However, the mechanics of time management dimension showed indirect effect on life balance. Together with concentration, scheduling was found to protect a person from procrastinating as assumed in time management literature (Lakein, 1973; Mackenzie, 1988). As a result, overcoming procrastination affected life balance positively. Moreover, moderator analyses established that the use of mechanics of time management is especially beneficial for those individuals who are less skilled in self-motivation and self-relaxation. This supports Macan's (1994) assumption that simply making lists more frequently might not be beneficial for everyone. Further, I obtained an indirect effect of two basic self-regulatory competences – self-motivation and self-relaxation – on life balance. Consistent with Kuhl's (2001) functional approach of self-regulation, self-motivation and self-relaxation were linked to self-determination. As a result, persons high in self-determination reported elevated levels of life balance.

## General Discussion

The findings of the present research suggest that time management has a positive impact on balancing time spent across major life domains, and that this may be due to enhanced feelings of control over time. Consistent with Macan's (1994) time management model, setting goals/prioritizing and preference for organization were linked to the greater perception of control over time which influenced life balance positively. The use of time management mechanics such as making lists and scheduling was, however, not directly related to greater control over time or life balance. Investigating this dimension of time management behavior in more detail, a relationship with procrastination was found. In accordance with the time management literature (Lakein, 1973; Mackenzie, 1988), scheduling protected individuals from procrastinating, and resulted in higher life balance. In addition, scheduling was found to be especially beneficial for persons less skilled in self-motivation and self-relaxation.

Further, I examined the role of time management behavior for coping with stress. Regression analyses established that only the goal setting/prioritizing dimension buffered the negative impact of stress on life balance. As expected, having clear goals and working on tasks with high importance was beneficial in highly stressful situations. In more relaxed (low stress) situations, goal setting and prioritizing was less relevant. Contrary to expectation, the other two dimensions of time management – mechanics of time management and preference for organization – did not significantly moderate the impact of stress on life balance. It may be that making lists more frequently and being well-organized is not always beneficial. For example, polychronic persons (people who engage in more than one activity at a time) are more “disorganized” than monochronic persons (people who focus on one task at a time), but the former seem to be better adapted to high-pressure situations (Kaufman-Scarborough & Lindquist, 1999). Further, by making schedules, people have the tendency to underestimate time needed for completing a task or a project (Buehler, Griffin, & Ross, 1994). Frequently making a list may not necessarily buffer the negative effect of stress when the tasks listed cannot be completed. Such “bad plans” can result in failures and poor progress on attaining goals and completing tasks and, as a result, contribute to an increase in negative affect and stress. Thus, it is possible, that only plans that do not underestimate the time needed for completing the tasks listed (i.e., realistic plans) can buffer the negative effect of stress. Empirical research is needed to examine this assumption.

In addition to time management strategies, I investigated the effects of two self-regulatory competences – self-motivation and self-relaxation – on life balance. Both com-

petences showed an indirect effect. Consistent with PSI theory (Kuhl, 2001), they influenced self-determination which, in turn, resulted in high life balance. This relationship may be attributable to the fact that self-determination facilitates the formation and attainment of self-concordant goals. Attaining self-concordant goals may be viewed as a mechanism underlying life balance (see Paper 3). As can be seen from Figure 5.3, self-determination showed a stronger effect on life balance than procrastination. This finding suggests that self-concordance plays a more important role for balancing one's life than efficient time management. Nonetheless, either factor is relevant.

A theoretically interesting question relates to the possible reasons why self-motivation and self-relaxation did not affect life balance directly? A plausible explanation is that either competence is especially needed in unpleasant situations. Self-motivation is particularly important by performing initially unpleasant tasks. Similarly, benefits of self-relaxation can be perceived especially in situations eliciting negative affect or tension. Thus, facing negative situations, we can expect self-motivation and self-relaxation to influence life balance directly. Research on affective coping and life balance supported this assumption (see Paper 4). Without an explicit confrontation with a stressful or unpleasant situation, the primary function of affect regulation (i. e., self-motivation and self-relaxation) may be its facilitating self-access (Koole & Jostmann, 2004; Kuhl, 2001), the prerequisite for the formation of self-concordant goals (which in turn facilitates life balance).

Some limitations of the present research should be underscored. First, all variables were measured through self-reports. Although self-reports are mostly used for assessing self-regulation and life balance, future research should also include more objective measures. Second, the reliability coefficients of the measures of perceived control over time and preference for organization are below conventional standards. Although both scales have been used successfully in past research (Macan, 1994; Macan et al., 1990), better measures of these variables should be used in the future. Finally, the sample was relatively small and consists of students only. However, issues of life balance are not limited to parents (Galinsky, Bond, & Friedman, 1996). Students often have jobs in addition to their studies and some of them are also married or are already parents. Nonetheless, a sample of employees with traditional families should also be studied. In future research, employees having families as well as those studying or living alone should be included.

In sum, time management behaviors were found to have a positive impact on life balance through increases in perceived control over time and prevention of procrastination.

Similarly, self-motivation and self-relaxation were found to lead to life balance indirectly through self-determination. One practical implication of the present research is that individuals should be encouraged to improve and practice their time management. Self-motivation and self-relaxation should be also improved. How should be this done? Time management training is often thought to be a possible way of development effective time management behavior. Past research established an effect of time management training on the reported use of time management behavior (Hall & Hursch, 1982; Gröpel, 2001; Orpen, 1993; Woolfolk & Woolfolk, 1986). However, these effects were not strong. For self-motivation and self-relaxation, a training based on the so-called *systems-conditioning* model (Kuhl, 2000) was developed and its effectiveness partly supported in clinical research (de Jong-Meyer et al., 1999). Although these findings are promising, more research is needed to support the training effectiveness, and to specify the training conditions under which the use of time management and the level of self-regulation competences can be better improved.

## Conclusion

### *Summary of Results*

The aim of the present research was to investigate basic personality mechanisms underlying life balance, to specify why life balance is beneficial for peoples' well-being, and to identify specific self-regulatory competences that affect the balance. The present findings extend previous research on work-family balance in several ways:

First, addressing the suggestions that the work-life system is multi- and not just two-dimensional (Amundson, 2001; Warren, 2004; Seiwert, 2000), life balance as a multi-dimensional construct was investigated. I focused on the balance among four life domains which were previously identified as the most important life areas (see Seiwert, 2000, 2001). In accordance with recent research on work-family balance, life balance was operationalized from a temporal perspective. Two new instruments (the Life-Balance Checklist and the Life-Balance Questionnaire) were constructed and tested on their validity. Both measures showed sufficient internal and external validity and, hence, could and can be used in the research on life balance.

Second, the relationship between life balance and well-being was specified. Consistent with recent findings (Arye, 1992; Fisher, 2002; Grant-Vallone & Donaldson, 2001; Greenhaus et al., 2003; Noor, 2004; Rice et al., 1992), the balance among major life areas was found to be beneficial for well-being. Moreover, need fulfillment was found to mediate this relationship. The idea was that balanced time is not a cause but only a prerequisite of well-being. The utilization of time for need fulfillment was assumed to be a causal factor. To recap Seiwert's (2001) suggestion, "it is not only important to allocate sufficient time across life areas but also to fill that time"; that is, time must be used for enacting goal oriented behavior in order to perceive benefits of life balance. As found in recent investigations, such behavior predicted SWB stronger when the goals reflected the individual's needs and satisfied them (e.g., Baumann, Kaschel, & Kuhl, 2004; Sheldon & Elliot, 1999). Testing the fulfillment of psychological needs negatively in terms of need frustration and positively by an index of need satisfaction, the general mediating hypothesis was supported. Persons who were able to balance their time adequately across life domains were found to be more likely to fulfill their own needs within the time invested, which resulted in an increased level of well-being.

Third, the congruence of needs, goals and behavior (i.e., attaining self-concordant goals) as a mechanism underlying life balance was partly supported. Participants scoring high in discrepancies among needs, goals and behavior perceived their time as inade-

quately distributed across main life domains. In addition, these participants scored lower on both explicit and implicit well-being. However, testing the effects on well-being experimentally, I obtained inconsistent results. Progress on goals attainment was found to increase well-being although the goals were not congruent with the person's needs or the behavior was not congruent with the goals set (the general goal attainment hypothesis).

Fourth, personality abilities that might help to maintain life balance under stress were identified. The findings supported the expectation that persons better in affective coping (i.e., action-oriented individuals) are more able to maintain life balance under stressful life events. State-oriented individuals benefited in pleasant (low stress) situations. However, under high stress, they lost their balance. Thus, action orientation buffered the negative impact of stress on life balance. In addition, having clear goals and working on tasks with high importance was beneficial in highly stressful situations. Individuals who clarify their goals and the importance of these goals were found to be more able to maintain their balance in conflicting life situations.

Fifth, time management behavior in relation to life balance was examined. Consistent with Macan's (1994) time management model, two of three time management factors (the setting goals/prioritizing, and the preference for organization) were linked to the greater perception of control over time which influenced life balance positively. The third factor, the use of time management mechanics such as making lists and scheduling, was not directly related to greater control over time or life balance. Investigating this dimension in more detail, scheduling was found to protect individuals from procrastinating, and resulted indirectly in higher life balance. In addition, scheduling was found to be especially beneficial for persons less skilled in self-motivation and self-relaxation.

Finally, basic self-regulatory competences (self-determination, self-motivation, and self-relaxation) were investigated. Consistent with Kuhl's (2001) functional approach of self-regulation, self-motivation and self-relaxation were linked to self-determination. As a result, persons high in self-determination reported elevated levels of life balance. This relationship may be attributable to the fact that self-determination facilitates the formation and attainment of self-concordant goals and, as mentioned above, attaining self-concordant goals may be viewed as a mechanism underlying life balance.

*Implications for Future Research*

Implications of the present findings were discussed in the papers included in my dissertation thesis. Only main implications regarding the whole research are discussed below.

One important implication is to investigate to what extent the findings of the present research can be generalized to employees having families. Although issues of life balance are not limited to employees and parents, there might be additional factors that can moderate the appropriateness of time spent. For example, Kofodimos (1990) proposes organizational culture to have great influence on how employees balance their lives. Organizations try to shape an individual by creating their own idealized images for the individual to live up to. Many companies use to strengthen their employees in their expansive and competitive tendencies by work demands and reward systems. Appropriate managerial qualities include intellect, technical knowledge, planning and problem-solving ability, whereas qualities such as emotional depth, sensitivity, caring for others, and self-awareness are seen as being irrelevant. To compete and win, employees must be detached from compassion for the losers. Striving for mastery and inappropriately high orientation toward work on the one side, and avoidance of intimacy on the other side are often the result assumed to cause the loss of balance in life (Kofodimos, 1990). In addition to these suggestions, objective stress and role overload should also be controlled in future research. High coping abilities such as action orientation or time management behavior are only of little relevance when external demands exceed a critical level. Seiwert (2001) argues that, in order to achieve balance in life, persons must optimize the number of roles they occupy in their lives. Occupying too much roles creates interrole conflict, role overload and stress in spite of good time management and coping skills.

Notably, the present research did not address the issue of goal content. As noted above, attainment of self-concordant goals and the ability to choose and attain such goals are important factors linked to life balance. However, a person might select and pursue value- and interest-consistent goals, but those goals are not consistent with his or her responsibilities. For instance, a father might regularly satisfy his affiliation need by going out with his colleagues instead of spending time with his family. In such case, the father's self-concordant goal is being attained (going out with colleagues is of higher value than to stay with family) and the appropriateness of time spent in the social contact area might be perceived (the person might subjectively perceive his time spent with friends and with family as appropriate). Nonetheless, the attainment of that self-concordant goal may produce con-

flict initialized from outside (e.g., from partner which perceives that time spent as not appropriate). Thus, balancing life expresses the congruency among person's values, goals and their attainment, but not the values per se. An interesting idea for future research is to investigate the congruency between partners' values and its impact on life balance, need satisfaction and well-being.

The findings suggest that affect- and self-regulatory competences including action orientation, time management behavior, self-motivation, self-relaxation and self-determination are beneficial for life balance. An important practical implication, which will be discussed in the next section, is to integrate the training of those competences into workplace programs that try to enable employees to effectively balance their life domains. Nevertheless, future research should help to develop, evaluate and optimize the training programs. Moreover, personality styles and temperament should be also studied in order to identify possible moderator variables.

### *Implications for Practice*

The present research provides some practical implication for everyday life. To balance the time across life domains effectively, a person should be aware of what is important and valuable for that person. In other words, he or she should identify his or her own values, personal needs and interests that are able to provide his or her life with meaning. Next, he or she should form or choose goals that are congruent with those values and needs, and that comprise activities related to major life domains – work/achievement, social contact and health. Such goals may be formed generally (e.g., to go out this evening) or more concretely (e.g., to have a date with Jane). Of course, he or she should create a time needed for attaining those goals and to orientate his or her behavior toward the goals set. Which abilities foster the process of forming and attaining self-concordant goals? According to PSI-Theory (Kuhl, 2001) and to the findings reported in my thesis, self-determination is an important ability needed for this process. This ability is fostered by self-motivation and self-relaxation – the competences that seem to facilitate self-access (Koole & Jostmann, 2004; Kuhl, 2001), that represents the prerequisite for the formation of self-concordant goals (which in turn facilitates life balance). In addition, the mechanism of action orientation, which is closely linked to self-motivation and self-relaxation, helps one not to lose his or her self-access facing stressful life events. Pleasant (low stress) situations are supportive for forming self-concordant goals (Kuhl, 2001) and for appropriate balancing time across life domains (see Paper 4). Under higher stress, however, individual differ-



ences in coping were observed supporting the importance of action orientation. The question of how the mechanism of action orientation as well as the basic self-regulatory competences (self-motivation and self-relaxation) can be trained expresses the first implication.

How do self-motivation and self-relaxation develop? Figure C. shows the systems-conditioning assumption of PSI-Theory (Kuhl, 2000, pp.140-143):

“Whenever two subsystems are repeatedly activated within a time window, the pathway between the two systems is strengthened. The generalization from classical conditioning to the conditioning of intersystemic pathways is to explain the development of self-relaxation and self-motivation. How can systems conditioning be compared to classical conditioning? The analogy is based on two assumptions. First, the expression of negative or positive affect is associated with an activation of the self-system. Second, there are external cues that have a “prewired” (unconditioned) effect on affect regulation: A mother’s encouraging vocalizations or her initiation of eye contact facilitates positive affect, whereas her reassuring vocalization and her touching the baby inhibits negative affect. Whenever maternal responses that downregulate or arouse negative or positive affects, respectively, follow the child’s expression of negative or positive affect supposedly mediated by an activation of the self-system (e.g., when the child is bothered by or interested in an object), the association between the child’s self-system and downregulation or arousal of affect is strengthened. As a result, the child acquires the capacity to downregulate negative affect or to activate positive affect without external stimulation of affect-generating systems.”

Thus, positive and negative affect gradually come under the control of the self-system when positive and negative self-expressions are answered promptly and adequately by another person. A positive treatment that does not occur in response to a self-expression cannot have this effect. In other words, during development, whenever a sufficient number of opportunities are encountered for associating activation of the self with the elicitation of positive or the downregulation of negative affect, the self acquires the capacity to control positive and negative affects, respectively (Kuhl, 2000).

Based on the systems-conditioning model, the training programs of self-motivation and self-relaxation were developed (see Kuhl, 2004, for an elaboration). As supposed in PSI-Theory, the development of both competences is strongly influenced by socialization experiences. Moreover, as supported by therapy research (de Jong-Meyer et al., 1999; Hartung & Schulte, 1994; Hautzinger, 1994), it was possible to improve the mechanism of action orientation with therapeutic methods directing the focus of attention from passive

cognitions revolving around unpleasant states to more active cognitions focusing on opportunities for future action. Thus, directing the focus to active cognition and opportunities for action together with answering the negative or inhibited positive self-expressions within a coaching or computer program (Kuhl, 2004) might help to improve affect regulation and the basic self-regulatory competences. Although self-motivation and self-relaxation seem to be competences that could be effectively trained, future research is needed to evaluate and optimize this training program. Nevertheless, both self-regulatory competences should be addressed in life-balance supporting programs.

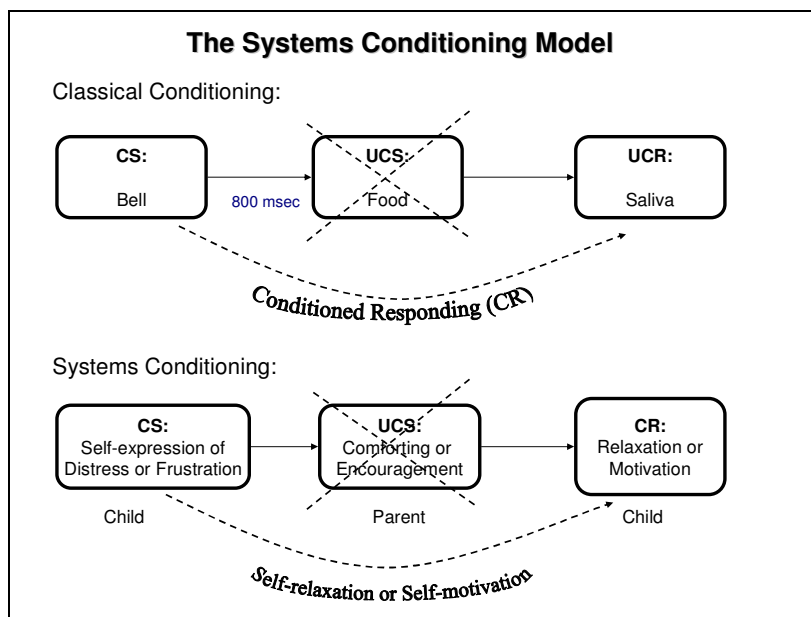


Figure C. The Systems-Conditioning Model (Kuhl, 2000, p.141)

Apart from self-regulatory competences reported above, time management behavior was also found to be beneficial for life balance (see Paper 5). Thus, time management training should also be included in life-balance supporting programs. The effectiveness of time management training has been often studied in recent research. For example, Hall and Hirsch (1982) found an increase in self-reported time spent on “high-priority” tasks after participants read a time management manual. King, Winnet, and Lovett (1986) found that working wives that participated in time management training received both immediate and long-term benefits. Subjects showed significantly greater increases in their knowledge of time and stress management factors, spent more time in a self-chosen, stress-reducing, enjoyable activity, and reported a greater amount of self-efficacy for time and stress management-related behaviors. Greiner and Karoly (1976) found an increase in the use of study time and a decrease in procrastination by college students after training. Other re-

searcher found similar effect of time management training on the reported use of time management behavior (Gröpel, 2001; Orpen, 1993; Woolfolk & Woolfolk, 1986). Although the results of experimental research suggest that training does not seem to influence “objective” criteria such as job performance (rated by supervisors) or grade point average (GPA; Bost, 1984; Greiner & Karoly, 1976; Macan, 1996), time management behaviors related to life balance (see Paper 5) were improved after participating in training (Gröpel, 2001; Macan, 1994; Orpen, 1993; Woolfolk & Woolfolk, 1986). Although these findings are promising, more research is needed to support the training effectiveness, and to specify the training conditions under which the use of time management can be better improved.

In sum, the present research supported the importance of balancing time spent across main life domains for people’s wellbeing. The attainment of self-concordant goals as a potential mechanism underlying life balance was proposed and self-regulatory competences linked to the balance identified. The results provide possibilities for future research and practical applications.

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## Appendix A

**The Life-Balance Checklist**

In this checklist, we ask how you spend your time on different activities or areas. Thought is the qualitative, not the quantitative time allocation – that is, not how many hours do you spend on some activity, but if you perceive the time spent on this activity as appropriate or not appropriate. Please, choose on the scale the answer that reflects your situation. “Too little time” means “I don’t spend enough time on this activity”. “Too much time” means “I spend more than enough time on this activity”.

***How much time do you spend on...***

	<b>too little time</b>	<b>appropriate time</b>	<b>too much time</b>
1. Your career	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
2. Making new contacts	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
3. Relaxation	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
4. Thinking about your own life	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
5. Work	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
6. Eating healthy	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
7. Maintaining friendships	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
8. Sleeping	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
9. Family (partner, parents ...)	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
10. Meeting friends	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
11. Fitness/Sport	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
12. Recreation	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
13. Work success	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
14. Seeing friends/acquaintances	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
15. Thinking about your self	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
16. Specifying your own values	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
17. Dealing with questions concerning the future	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)
18. Achieving goals	(too little time) 1 2 3 4 5 6 7 8 9 10		(too much time)

*Subscales (Item and Item Number)*

- *Work/Achievement*: Your career (1), Work (5), Work success (13), Achieving goals (18)
- *Contact/Relationships*: Making new contacts (2), Maintaining friendships (7), Family (partner, parents ...) (9), Meeting friends (10), Seeing friends/acquaintances (14)
- *Body/Health*: Relaxation (3), Eating healthy (6), Sleeping (8), Fitness/Sport (11), Recreation (12)
- *Life Meaningfulness*: Thinking about your own life (4), Thinking about your self (15), Specifying your own values (16), Dealing with questions concerning the future (17)

*Quantitative analysis*

Both extremes of the 10-points Likert scale (points 1 & 10) represent the inappropriateness of time spent on areas of life, whereas the middle of the Likert scale (points 5 & 6) represents maximum appropriateness of time spent across life domains. For research purposes, each partial rating must be rescored before computing the total score of life balance. The logic of this rescoring is as followed: central points 5 & 6 are rescored to the value “5” which represents the maximal appropriateness of time spent; points 4 & 7 are rescored as yielding the value “4”; points 3 & 8 as “3”; points 2 & 9 as “2”; and extreme points 1 & 10 are assigned to the value “1” which amounts maximum inappropriateness of time spent. After this rescoring, the scores for each subscale (work/achievement, contact/relationships, body/health, life meaningfulness) can be computed by summing up resultant scores across relevant items. Summing up resultant scores across all items, higher score represents higher life balance.

*Qualitative analysis*

In individual cases, a qualitative analysis can be made to see if there is balance among life areas, or if the person spends inappropriate time on one or more life areas. Using graphical schemas, qualitative analysis schematically shows how balanced the life areas of an individual are. For this purpose, a score obtained from 10-points Likert scale is used (no rescoring!). For each life area, an index is computed according to following formula (“i” = item score; “n” = number of items):

$$index_{(subscale)} = [(i_1 + i_2 + \dots + i_n) / n] * 10$$

For example, index of the work/achievement area will be computed by summing up the partial scores of relevant items, divided by 4 (number of items), and finally multiplied by 10. An ideal value of the index is 55. Comparing individual indexes of each subscale allows for the complete picture of balanced time behavior. Values about 55 represent the ideal appropriateness of time spent. Values greater than 70 or less than 30 indicate inappropriate preferring or neglecting one life area. Are the index values for all subscales similarly high and not greater than 70 or less than 30, we can speak about balance among the most important life areas. On the other side, is the difference among the subscale indexes too high, or is the index of one or more subscales greater than 70 or less than 30, the balance among life areas is impaired.

## Appendix B

**The Life-Balance Questionnaire**

This test has 20 questions. Choose on the scale (from “*completely disagree*” to “*completely agree*”) the answer that reflects your situation. Please, answer all questions.

	<i>Completely disagree</i>					<i>Completely agree</i>
	①	②	③	④	⑤	⑥
1. I often visit my friends and acquaintances	①	②	③	④	⑤	⑥
2. Because of my work, I have no free time	①	②	③	④	⑤	⑥
3. Recently I couldn't stop and think about myself	①	②	③	④	⑤	⑥
4. Because of my work I neglect my family or friends	①	②	③	④	⑤	⑥
5. I have too little time to sleep	①	②	③	④	⑤	⑥
6. I spend more time working than other people	①	②	③	④	⑤	⑥
7. Recently I haven't eaten regularly	①	②	③	④	⑤	⑥
8. Life goes so quickly that I have no time to think about its meaning	①	②	③	④	⑤	⑥
9. I have enough time for my family (partner, parents, children...)	①	②	③	④	⑤	⑥
10. I don't take care enough about my health	①	②	③	④	⑤	⑥
11. I give myself enough time for thinking about my life	①	②	③	④	⑤	⑥
12. I have enough time for my friends	①	②	③	④	⑤	⑥
13. In my free time I still deal with my work duties	①	②	③	④	⑤	⑥
14. I have enough time to relax	①	②	③	④	⑤	⑥
15. I have too little time for speaking to my friends	①	②	③	④	⑤	⑥
16. I work more than others	①	②	③	④	⑤	⑥
17. I have enough time for thinking about the meaning of my life	①	②	③	④	⑤	⑥
18. I have too little time to care about my family/friends	①	②	③	④	⑤	⑥
19. I work out enough to stay fit (e.g., jogging, sport...)	①	②	③	④	⑤	⑥
20. I get enough sleep	①	②	③	④	⑤	⑥

*Subscales (Item Number)*

- Work/Achievement: 2\*, 4\*, 6\*, 13\*, 16\*
- Contact/Relationships: 1, 4\*, 9, 12, 15\*, 18\*
- Body/Health: 5\*, 7\*, 10\*, 14, 19, 20
- Life Meaningfulness: 3\*, 8\*, 11, 17

The items labeled with “\*” represent reverse items.

*Quantitative analysis*

Before analysis, the reverse items must be rescored. Subscale scores are computed by summing up resultant scores across relevant items. Note that the fourth item belongs to two subscales. A total score is calculated by adding up the figures of all answers. A high total score indicates the sufficiency of time available for the life areas.

*Qualitative analysis*

In individual cases, a qualitative analysis can be made to see if there is balance among life areas, or if the person perceives insufficiency of time available for one or more life areas. Using graphical schemas, qualitative analysis schematically shows how balanced the life areas of an individual are. For each life area, T-score is computed according to following formula (means and standard deviations of each subscale are obtained from norms):

$$T\text{-Score}_{(subscale)} = [(subscale\ score - mean_{(subscale)}) / SD_{(subscale)}] * 10 + 50$$

Comparing T-scores of each subscale allows for the complete picture of perceived sufficiency of time. Values about 50 and more represent the perceived sufficiency of available time; values less than 40 indicate insufficiency of time available for the life area. Has a T-score of one or more life areas value less than 40, the balance among life areas is impaired. T-scores about 50 or greater in all life areas indicate the balance in one’s life (i.e., the sufficiency of time available in all main life domains).

## Appendix C

**The Self-Concordance Model** (Sheldon & Elliot, 1999)

The Self-Concordance Model (see Figure D) represents an integrative model of conative process, which has important ramifications for psychological need satisfaction and hence for individuals' well-being. The self-concordance of goals (i.e., their consistency with the person's developing interests and core values) plays a dual role in the model: First, those pursuing self-concordant goals put more sustained effort into achieving those goals and thus are more likely to attain them. Second, those who attain self-concordant goals reap greater well-being benefits from their attainment. Attainment-to-well-being effects are mediated by need satisfaction.

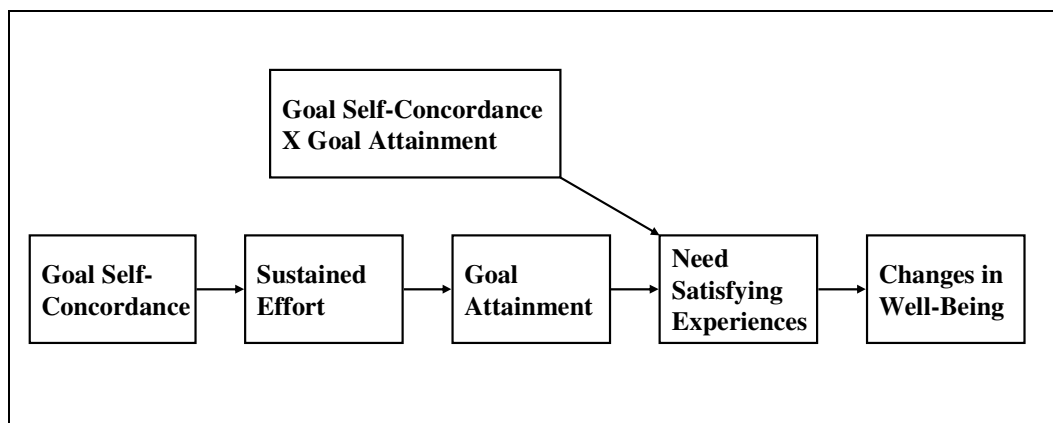


Figure D. The self-concordance model (Sheldon & Elliot, 1999, p.483).

*The Inception-to-Attainment Process*

The Self-Concordance Model begins when people select and commit to a set of goals. Thus, it begins at the point of goal selection, with the assumption that people's deliberations may have been flawed. That is, some individuals may have selected goals that do not represent the values and interests of their "self" well. Based on the concept of self-determination theory, goals are thought to be self-congruent when they are pursued because of either intrinsic or identified motivation. In either case, goals are said to be integrated with the self. Because the developing interests and deep-seated values that such goals express are relatively enduring facets of personality, self-concordant goals are likely to receive sustained effort over time. In contrast, goals pursued only because of external pushes, or because of introjected sanctions characterized by anxiety and guilt, are said to emerge from a nonintegrated region of the person. Because external and introjected goals tend to be less representative of enduring interests and values, the volitional strength be-

hind them is likely to fade when obstacles are encountered. Notable, self-concordant goals do not necessarily feel “good” nor are they necessarily self-gratifying. For example, the goal “check frequently to make sure my baby’s diaper is clean” is not pleasant for most parents, but nevertheless it may be undertaken willingly because the parent identifies with the value of health and good hygiene. Thus, in the self-concordance model the key distinction is not whether the goal is pleasurable but rather whether the person feels ownership as he or she pursues the goal.

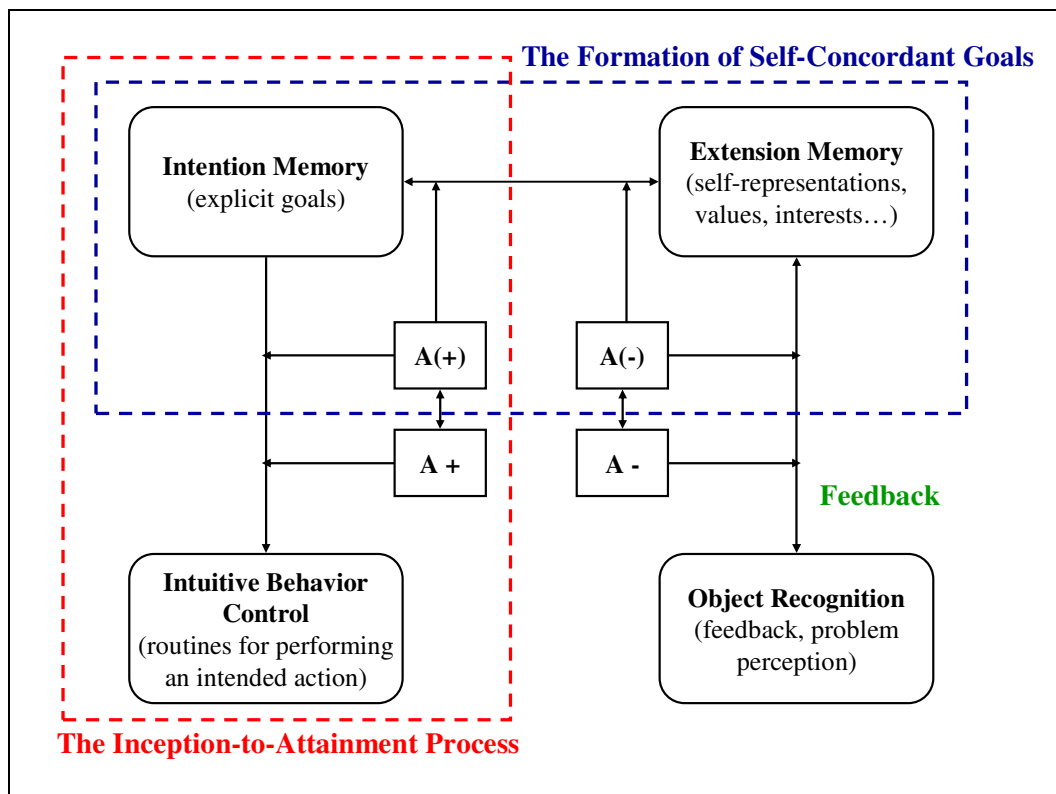
### *The Attainment-to-Well-Being Process*

Achieving goals feels good. In other words, there are natural satisfactions to be found in the process of exercising one’s competencies to move toward desired outcomes. However, not all progress is beneficial. Individuals whose goals are not self-integrated may experience little changes in well-being, no matter how well they progress in achieving their goals. It is assumed that this occur because nonconcordant goals, even when attained, do not satisfy important psychological needs. In contrast, persons who pursue goals for self-concordant reasons benefit substantially from their attainment, as evidenced by their enhanced feelings of well-being. Thus, self-concordance plays two important roles in the model: First, it enables individuals to put sustained effort into achieving their goals, helping them to attain those goals. Second, it makes it more likely that goals, when attained, will afford the experiences of fulfilling psychological needs (e.g., autonomy, competence, and relatedness) and, as a result, enhance well-being.

### **A Functional Approach to the Self-Concordance Model** (Short suggestions from PSI-Theory)

The Personality Systems Interaction (PSI; Kuhl, 2001) theory provides a useful framework to functionally explain how the self-concordant goals are formed and pursued (see Figure E). It is assumed, that self-concordant goals are formed by the information exchange between extension and intention memory. This is expected to occur by the relative activation of both systems (i.e., affective balance). Explicit goals (formed in intention memory) are matched with personal values, interests, implicit needs and other aspects of the self (contained in extension memory). Such self-determined/self-concordant goals provide organism with energy (e.g., positive affect) and motivation which may facilitate goals attain-

ment. The enactment of goals is mediated through intuitive behavior control – the system that provides routines for performing an intended action. However, if there is no good opportunity for pursuing goals or a difficult problem has to be solved, as indicated by the feedback from the system named object recognition, it is adaptive to inhibit premature enactment. As soon as a good opportunity arises (positive affect – an emotional indicator of the appropriateness of enactment – is aroused), the goals are pursued.



*Figure E.* The formation and attainment of self-concordant goals on the basis of PSI-Theory. A + = positive affect, A(+) = inhibition of positive affect, A - = negative affect, A(-) = reduction of negative affect.



### **Eidesstattliche Versicherung**

„Ich erkläre hiermit an Eides Statt, dass ich die vorliegende Arbeit selbstständig und ohne Benutzung anderer als der angegebenen Hilfsmittel angefertigt habe. Die aus fremden Quellen direkt oder indirekt übernommenen Gedanken sind als solche kenntlich gemacht. Die Arbeit wurde bisher in gleicher oder ähnlicher Form keiner anderen Prüfungsbehörde vorgelegt und noch nicht veröffentlicht.“

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Peter Gröpel