Individual differences in the reaction and adaptation to retirement

A psychological perspective on well-being in the retirement transition
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Abstract


The overall aim of the present licentiate thesis is to shed light on the effect of retirement on well-being. Retirement is an important life event, because people leave their work place, which played an important part in their daily lives, and enter a new life phase with new opportunities, new challenges and new roles. The focus of the thesis is less on the main effect of retirement, but more on individual differences in the way people react and adapt to retirement. The goal is to identify factors that predict change or continuity in well-being across the retirement transition. The thesis is based on a review article and an empirical article.

Study I is a structured literature review on longitudinal studies on the effect of retirement on well-being. 32 studies met the inclusion criteria of the review. It can be concluded from the reviewed studies that retirement is neither an overall positive, nor negative event, but must be seen in the individual context. Various moderators have been identified in the reviewed studies. In general, the context of retirement, the individual work life experiences, and pre-retirement resources influence change in well-being across the transition. It remains unclear yet which psychological factors and
post-retirement adaptation strategies play a role in the short- and long-term adaptation to retirement.

Study II deals with the role of personality for changes in well-being across the retirement transition. Personality is an important predictor of well-being over the life span, and moderates the adaptation to life events as well. But the role of personality for the retirement transition has rarely been investigated. Using two waves of the Health, Aging and Retirement Transitions in Sweden (HEARTS) study \((n=2,797)\), it was tested if personality types and/or traits moderated the effect of retirement on change in subjective well-being across one year. Four personality types were identified in a latent profile analysis. Latent change score models showed that those who retired between assessments experienced stronger increases in subjective well-being compared to those not retiring. For one group with low openness, agreeableness, extraversion and conscientiousness, but high neuroticism, retirement was associated with a decrease in well-being. When only personality traits were included, results showed a moderating effect of agreeableness so that high scores on agreeableness enhanced the increases in well-being after retirement.

Both studies show that retirement can have an impact on well-being, but this impact depends on a lot of interconnected factors on different levels. This thesis presents risk factors and important resources for a more positive development across the retirement transition. Personality is one factor on the
individual level that seems to play a part in retirement adjustment. Further research is needed to shed light on underlying mechanisms and long-term consequences.
This thesis consists of a summary and the following two papers, which are referred to by their roman numerals:


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Chapter 1
Chapter 1
Well-being across the retirement transition

1.1 One event, many perspectives - Multidisciplinary research on retirement

In 1889, the German government introduced the world’s first public pension system (Börsch-Supan & Wilke, 2004). Both employers and employees paid into the system, to ensure financial security when the employee was 70 years of age and stopped working. While this was an important milestone for the development of welfare states, its implications for the society at that time must be seen in light of the low average life expectancy back then (45 years in Germany; Börsch-Supan, & Wilke, 2004; 52 years in Sweden, Human Mortality Database, 2017). The number of people living long enough to receive pensions was comparatively small. Around 1900, only 7% of the Swedish population was older than 65 (Mirkin & Weinberger, 2001).

During the roughly 130 years since the introduction of this pension system, strong demographic change has occurred, especially in Western countries (Anderson & Hussey, 2000; Bongaarts, 2004). In particular over the last decades, population ageing has led to 19.8% of the Swedish population
being older than 65 in 2016 (Eurostat, 2017). The Swedish old age
dependency rate, i.e. the ratio of people over 65 to people over 15, was 31.5%
(Eurostat, 2017). These developments take place in other industrialized
countries as well. This has two main consequences: First, the economic
burden on the public pension system has increased dramatically (Bongaarts,
2004). Second, retirement has become a normative life event; people are
expected to retire someday and anticipate retirement (Ekerdt, Kosloski, &
deViney, 2000). The retirement event marks the transition to a new life
phase, which is part of a typical, institutionalized life course, and people are
assumed to develop their orientations, plans and actions with regard to this
normative life course (Kohli, 1985; 2007). Concluding, population ageing has
amplified the importance of retirement both as a life phase and an event.
Correspondingly, the interest of researchers on the topic has strongly
increased (Shultz & Wang; 2011; Wang & Shi, 2014).

Researchers studying the retirement event come from various (sub-)
disciplines and have different theoretical expectations and interests.
Szinovacz (2012) sees retirement as a multilevel process. At the individual
(micro-) level, retirement is an individual transition which includes individual
planning, decision making, the transition and changes in status and role. The
individual retirement is also embedded in an individual organizational setting
(meso-level), with specific employer policies and organizational norms,
which in turn is embedded in a macro-level institutional context with specific
cultural norms and public regulations. Researchers with a background in public policy often concentrate on the macro-level (Börsch-Supan, 2000; Fasang, 2010; Gruber & Wise, 2002; König & Sjögren Lindquist, 2016); while work and organizational scientists are often interested in the meso-level (Henkens & van Dalen, 2012; Potocnik, Tordera, & Peiró, 2009; Van Solinge & Henkens, 2014).

In this thesis, I follow the line of other psychological studies that focus on the individual, and more specifically, the psychological level (Wang & Shi, 2014). Following other recent studies in the field (e.g. Wang, 2007), I investigate the retirement adjustment process. While much of the literature on retirement is focused on understanding why, when and under which circumstances retirement happens (Feldman & Beehr, 2011), I study retirement as a predictor of subsequent changes and adaptation. The main focus is on the effect of retirement on the individual, and about individual differences in the reaction and adaptation to retirement (Wang, Henkens, & van Solinge, 2011). While the focus of the present licentiate thesis is on post-retirement outcomes, pre-retirement developments are important to understand the individual context of the transition. Factors that lead to retirement (retirement planning, retirement decision, reasons for retirement) are integrated as moderators of the effect of retirement in the review paper (study I).
The background of this thesis is in developmental psychology, which is the study of human life span development. The focus in life span psychology is on general development, inter-individual differences in development, as well as intra-individual plasticity (Baltes, Lindenberger, & Staudinger, 2006). In this study, this is applied to retirement by focusing on general effects of retirement on the individual, individual differences in the reaction to retirement, and long-term adaptation. Figure 1 illustrates this with respect to the effect of retirement on well-being, which is also the focus of this thesis. The graphs are based on fictitious data. The first graph shows a positive main effect of retirement, the second graph shows how people develop differently across retirement, and the last graph shows an example of long-term adaptation.
Figure 1. Human development across the retirement transition

Note. Hypothetical data a) General development, b) Inter-individual differences, c) Long-term adaptation
Changes and adaptation across the retirement transition are of special interest for developmental psychologists because they shed light on different important aspects in the field, such as views on ageing (Fasbender, Deller, Wang, & Wiernik, 2014), the psychosocial importance of the work place and the work role in later life (Taylor-Carter & Cook, 1995; Wong & Earl, 2009), as well as general adaptation styles (Kubicek, Korunka, Raymo, & Hoonakker, 2011).

The effect of retirement on individual development has important practical implications as well. If retirement constitutes a risk factor for health and well-being, interventions could be appropriate both on the macro-societal and the micro-societal level (Bengtson & Settersten Jr., 2016). On the macro-societal level, a negative effect of retirement would support the general intentions to postpone retirement (Dave, Rashad, & Spasojevic, 2008), or highlight the inefficiency of the current retirement plans and pension systems (Fonseca, Kapteyn, Lee, Zamarro, & Feeney, 2014). On the individual level, retirement counseling might need to be introduced more widely (Ash, 1966; Kalt & Kohn, 1975; Osborne, 2012), and people with an increased risk of post-retirement problems might need to be identified already years before retirement to ease the transition.

Previous studies have examined changes in different (but interconnected) domains such as well-being (e.g. Wang, 2007; Wetzel, Huxhold, & Tesch-Römer, 2016), cognitive performance (Bonsang, Adams,
& Perelmann, 2012; Mazzonna & Peracchi, 2012), personality (Löckenhoff, Terracciano, & Costa Jr., 2009; Specht, Egloff, & Schmukle, 2011), health (Behncke, 2012; Calvo, Sarkisian, & Tamborini, 2013; Mojon-Azzi, Sousa-Poza, & Widner, 2009), leisure activities (Nimrod, 2007) and health-related behaviors (Barnett, van Sluijs, & Ogilvie, 2012; Midanik, Soghikian, Ransom, & Tekawa, 1995; Stenholm et al., 2016). In this licentiate thesis, I am mainly interested in changes in well-being across the retirement transition.
1.2 Why should we study well-being around retirement?

“Well-being” is a broad term that includes different subcomponents and is measured by a large numbers of questionnaires, scales and items. In general, researchers distinguish two different conceptualizations of well-being: Hedonic and eudaimonic well-being (Deci & Ryan, 2008; Ryan & Deci, 2001). The concept of hedonic well-being is mostly based on the presence of pleasant and unpleasant feelings (Ryan & Deci, 2001). Researchers who study “subjective well-being” (Diener, Suh, Lucas, & Smith, 1999) use this definition. Subjective well-being includes a cognitive-evaluative component, life satisfaction, as well as an emotional component, mostly positive and negative affect (Deci & Ryan, 2008; Diener, 1984; Luhmann, Hofmann, Eid, & Lucas, 2012). In contrast, eudaimonic well-being (Deci & Ryan, 2008; Ryff, 1989; Ryff & Singer; 2008) refers to leading a fulfilling, good life. Key components in the influential model of “psychological well-being” (Ryff, 1989) are self-acceptance, purpose in life, environmental mastery, positive relationships, personal growth, and autonomy (Ryff & Singer, 2008). The relationship between hedonic and eudaimonic well-being is complicated. There is some support for the view that they constitute different but closely related concepts (Gallagher, Lopez, & Preacher, 2009; Keyes, Shmotkin, & Ryff, 2002; Ryan & Deci, 2001; Waterman, Schwartz, & Conti, 2008). With respect to research on retirement
adjustment, the vast majority of studies are based on hedonic respectively subjective well-being (but see Kubicek et al., 2011; Yeung, 2013).

Eudaimonic well-being will be inspected in this thesis as well (in study I), but study II will only focus on subjective well-being.

Investigating well-being around retirement is interesting for different reasons: First, well-being constitutes a general marker of individual adjustment which is highly relevant for the individual and which is an overall common goal (Yap et al., 2014). It is thus very interesting to investigate how strongly people react to retirement in terms of well-being and if there is adaptation, as well as variability in these patterns (see e.g. Pinquart & Schindler, 2007), which relates to the major goals of life span psychology, as noted above (Staudinger et al., 2006).

The second argument for investigating well-being is its predictive value for other important outcomes. Well-being constitutes a base for future development and resource acquisition of a person (Tesch-Römer, Wiest, & Wurm, 2010), and it is an important predictor of different health-related outcomes and mortality (Bjälkebring & Johansson, 2017; Diener & Chan, 2011; Guven & Saloumidis, 2009; Wiest, Schüz, Webster, & Wurm, 2011; Wiest, Schüz, & Wurm, 2013). More specifically, the adaptation to life events has also been identified as a predictor of longevity (Infurna, Wiest, Gerstorf, Ram, Schupp, Wagner, & Heckhausen, 2017). It is possible that those who experience problems in the adaptation to retirement might also be
more likely to experience worse health outcomes later in life (Grotz et al., 2016). Identifying these individuals might add to our understanding of ageing in general and ease possible interventions.

Finally, retirement offers interesting opportunities to study general age-related challenges. Retirement can be seen as a symbolic transition into old age (Ekerdt, 2010), and it might be the first time retirees experience some of the challenges they are increasingly confronted with in older age. This includes for example structuring daily life (Schmidt-Hertha & Rees, 2017), finding stimulating activities (Nimrod, 2007; Andel, Finkel, & Pedersen, 2016), and maintaining a social network (Fletcher, 2014) without the external structures and resources of work life. Apart from these psychosocial factors, retirement is also associated with mild to severe losses in income for most retirees, and they need to adjust to this (Karpas, Bamberger, & Bacharach, 2013). How successfully retirees master this transition, and which strategies they use can help to understand general development in older age.

Choosing well-being as an outcome is of interest if changes in well-being regularly occur and might be long lasting. Contrastingly, it has been argued that well-being is heritable, stable, and rarely sensitive to external factors and life events (Brickman, Coates, & Janoff-Bulman, 1978; Eid & Diener, 2004). Some authors assumed an individual “set point” that defines the general level of well-being over the life span, as a stable trait, around which well-being fluctuates over time (Brickman & Campbell, 1971). These
approaches are referred to as “set point theories” (Hülür & Gerstorf, in press). Within this approach, it is assumed that even if life events might have a short-term effect, subjective well-being tends to return to the “original” state through some adaptive actions or changes in aspirational level (Brickman & Campbell, 1971). This would imply that retirement will have a lasting influence on well-being. Although these assumptions have been quite prominent over decades, empirical findings show that despite the strong stability of well-being, there are actually both short-term and long lasting effects of life events (Anusic, Yap, & Lucas, 2012; Diener, Lucas, & Scollon, 2006; Lucas, 2005; 2007; Lucas, Clark, Georgellis & Diener, 2004; Yap, Anusic, & Lucas, 2012). Furthermore, studies show considerable individual differences not only in level of baseline well-being, but also in the strength of the reaction to a life event, as well as the long time adaptation (Diener et al., 2006; Diener et al., 1999; Yap, Anusc, & Lucas, 2014).

An alternative approach is to study adjustment to retirement more directly by investigating adjustment problems (van Solinge & Henkens, 2005; Wong & Earl, 2009) or retirement satisfaction (Fouquereau, Fernandez, Fonseca, Paul, & Uotinen, 2005) after the transition. However, knowing the perceived adjustment does not inform us about changes across the transition, or about the actual effect of retirement. If retirees report that they experience the transition as problematic, or are dissatisfied with retirement, they might have experienced problems already before retirement,
because of factors that are not related to retirement. Examining changes in
well-being seems more appropriate to distinguish the specific effect of
retirement from other lifelong processes of change and continuity in
psychological health.
1.3 Different theoretical approaches on well-being in retirement

While some life events might be expected to be clearly negative, it is less obvious how retirement influences well-being. As noted above, the effect of retirement has been studied by researchers from different disciplines, which leads to different foci and theoretical assumptions. Furthermore, potential predictors of change in well-being are numerous and can be found on different levels (Martins Barbosa, Monteiro, & Giardini Murta, 2016). To understand the multi-faceted association of retirement and well-being, it is of crucial importance to know the underlying theoretical mechanisms and developments over time.

Over time, different theoretical approaches have been applied to the study of the retirement transition (for a longer overview, see e.g. van Solinge, 2012; Wang, 2007; Wang et al., 2011). In general, there are two major trends: Retirement is viewed as less risky and stressful than it was seen in earlier decades (Bossé, Aldwin, Levenson, & Workman-Daniels, 1993; Latif, 2011), and researchers highlight the large heterogeneity in retirement adjustment (Kim & Moen, 2001; 2002; Pinquart & Schindler, 2007; Wang, 2007): People differ in their reaction to retirement, and understanding these differences is the goal of many studies, as well as the goal of the present licentiate thesis.
Earlier studies have seen retirement as a stressful life event (Van Solinge, 2012). Leaving work meant losing the most important role in life, and depression and adjustment problems were expected (Ballweg, 1967; Ellison, 1968; George & Maddox, 1977). Role theory implies particular losses for those with greater work centrality, which means those who had a stronger commitment to the work role (Kim & Moen, 2001; Taylor-Carter & Cook, 1995). Continuity theory (Atchley, 1971; 1989), on the other hand, implies that retirement should have a lower impact on well-being, since identity and roles could also be found in non-work related areas such as family life and leisure, already before retirement. A satisfying post-retirement lifestyle, as well as continuity in most important internal and external structures, should help to ensure a smooth transition to retirement for most retirees (Atchley, 1971). Atchley (1976) even proposed a “honeymoon effect”, i.e. a positive short-term effect of retirement on well-being, because of a relief from a stressful work life. Later studies highlighted the importance of several family-related and psychological factors, and experiences over the life span for well-being in retirement and encouraged a life course or life span approach to retirement (Kim & Moen, 2002).

Wang (2007) identified three subgroups of U.S. retirees with trajectories of well-being across the retirement transition. The largest group experienced stability across the transition. For a second group, retirement was associated with a short-term increase in well-being. A third small group
experienced short-term losses in well-being. The groups differed in important characteristics such as last work status, work satisfaction and health. In the same year, Pinquart and Schindler (2007) found comparable groups in a German sample. These findings led to the development of the dynamic resource approach on retirement adjustment (Wang, 2007; Wang et al., 2011). From this point of view, adjustment and well-being at a given time point in retirement are a result of the current availability of physical, cognitive, motivational, financial, and social resources, because these resources are needed to fulfill important needs (Wang, 2007). The individual amount of resources is associated with factors at the macro (e.g. governmental policy), organizational (e.g. organizational climate), job (e.g. job conditions), household (e.g. marital quality), and individual level (e.g. personality). These factors change over time; consequently, the accessible resources change as well, and so does retirement adjustment and well-being (Wang et al., 2011).

If we apply this perspective to the retirement transition, we can conclude that the effect of retirement depends to a large extent on its effect on the individual resources. First, stable pre-retirement resources (e.g. social network, health) might work as a buffer against challenges in the post-retirement environment and secure the access to important resources and need satisfaction over time (Wang et al., 2011). Secondly, differences in the effect of retirement are explained by differing changes in access to resources
across the retirement transition. If retirement is associated with a loss in resources, for example in income (Karpas et al., 2013), or perceived control (Kim & Moen, 2002), the individual well-being will decrease as well. If retirement is accompanied by gains in resources, well-being is likely to increase. Hypotheses for the identification of these factors can be derived from other theories. For example, role theory would predict that stronger work role attachment before retirement could be related to losses of identity, and thus also to losses in well-being.

The advantage of this approach is its integrative value and its applicability for multidisciplinary research. Researchers from different disciplines can agree on the overall resource approach and apply their respective theories and knowledge to improve the field (Wang et al., 2011).

A disadvantage of this model is that the concept of “resources” is not discussed any further, and this affects the possibility to derive hypotheses from the resource approach alone. Most likely, retirement offers some advantages and some disadvantages in terms of resources. For example, a person might experience a relief from an exhausting work environment after retirement (van den Bogaard, Henkens, & Kalmijn, 2016). In this respect, this person should gain physical resources in retirement. Nevertheless, this person would still lose social resources if he or she had a good social network at the work place. Since there is no hierarchy of needs included in the model, it remains unclear which losses or gains are most important, or if changes in
different resources could interact. Furthermore, it is implicitly assumed that a
given resource is of equal importance for every individual, and that all people
are equally sensitive to resource changes. However, as stated above, the
retirement approach is a first step towards a more holistic and
interdisciplinary view of the retirement transition.
1.4 Active adjustment and adaptive strategies in retirement adjustment

While many external factors (e.g. company policy, health, care obligations) determine the retirement process and retirement adjustment, retirement can partly be seen an active process. Within all the theories stated above, active coping and adaptation can play a part. Role theory implies that people can actively decrease their role engagement in the work role, and increase their role engagement in non-work related roles, already before retirement, or directly after (Damman, Henkens, & Kalmijn, 2013; Maizel Chambré, 1984). Within the life course approach, people are expected to have plans and perform actions to shape their own post-retirement life (Wang et al., 2011). Within the framework of continuity theory, people are believed to actively seek continuity in post-retirement leisure (Atchley, 1971). Finally, even though not explicitly stated, the resource approach allows for active coping processes to outweigh losses across the transition.

Brandstädter and Renner (1990) argue that there are two positive ways to respond to a changing environment: First, people can try to alter the environment according to their own goals and ideals (accommodation). Second, they can flexibly adjust their goals to the given circumstances (assimilation). Both techniques can be adaptive and help coping with age-related challenges (Brandstädter & Renner, 1990; Brandstädter & Rothermund, 2002). Hesketh, Griffin, Dawis, and Bayl-Smith (2015) use
similar constructs with regard to retirement adjustment: proactive adjustment means changing the environment to fit to the person’s needs, reactive adjustment means changing the person to fit to the environment. Löckenhoff (2012) argues that the model of selection, optimization, and compensation (SOC, Baltes 1997) and the motivational theory of life span development (MTLD, Heckhausen, Wrosch, & Schulz, 2010) might be applied to adjustment behavior and goal changes after retirement as well. In the context of the SOC model, successful adaptation is achieved through the selection of appropriate goals, optimization of given resources, and compensation for losses (Baltes, 1997). With regard to retirement, retirees would need to select appropriate goals, out of their own interests and needs (elective selection), and in response to retirement-related losses (loss-based selection). They should optimize given pre-retirement resources, and compensate for losses, for example for the losses of social contacts at work. The focus in the MTLD (Heckhausen et al., 2010) is on how to achieve control over one’s life over the life span. Similar to Brandstädter and Renners’s (1990) approach, one can either try changing the environment (primary control), or one’s own internal states (secondary control), to achieve control.

Understanding adjustment behaviors is important for understanding retirement adjustment. They also need to be kept in mind when making predictions about post-retirement well-being. For example, in the light of the resource approach, people who are very satisfied with their job are those who
will lose more resources when they retire. On the other hand, they have found a job that is rewarding on many levels, which might be an indicator of better adaptive skills, and might also predict adaptive actions after retirement. Comparable results can be found in the research on the effect of retirement on cognitive health: Different authors have investigated the effect of retirement on cognitive performance (e.g. Mazzonna & Peracchi, 2012). It has been argued that the effect should be moderated by pre-retirement work complexity (Finkel, Andel, Gatz, & Pedersen, 2009; Fisher, Stachowski, Infurna, Faul, Grosch, & Tetrick, 2014): Higher work complexity should either work as a buffer (Fisher et al., 2014) against cognitive decline later on, or as an indicator of stronger losses across retirement (Finkel et al., 2009). However, a recent study (Andel, Silverstein & Kareholt, 2014) found that the effect of pre-retirement work complexity became insignificant once post-retirement activities were taken into account. Andel et al. (2016) on the other hand, found that both pre-retirement work life and post-retirement activity explained change in cognition after retirement. These studies show that it is important not only to look at pre-retirement factors, but also at post-retirement behavior and connections between pre-retirement situation, applied strategies and positive or negative post-retirement outcomes.

Adaptive actions can already be performed long before the actual retirement event. It is assumed that older adults willingly withdraw from work life and turn their attention towards other life areas (Damman et al.,
2013; Wang & Shi, 2014). Years before retirement, people start to plan and prepare for retirement (Adams & Rau, 2011). While a lot of the literature on retirement planning discusses financial planning, its predictors and its adequacy (e.g., Elder & Rudolph, 1999; Hershey, Jacobs-Lawson, McArdle, & Hamagami, 2007; Stawski, Hershey, & Jacobs-Lawson, 2007), other studies show that people make certain plans for their post-retirement life as well (Petkoska & Earl, 2009). Planning can be helpful to develop a realistic view on retirement and to gain control over the situation (Taylor-Carter, Cook, & Weinberg, 1997).

However, the extent of retirement planning does not seem to predict well-being and retirement adjustment (Donaldson, Earl, & Muratore, 2010; Topa, Morano, Depolo, Alcover, & Morales, 2009). The success probably depends on the kind of planning and preparation people perform (Yeung, 2013), and most important, the actual pre- and post-retirement adaptive actions.

Surprisingly, there is little research on proactive or reactive adjustment after retirement. Van Solinge and Henkens (2008) argue that the main tasks in retirement adjustment are to cope with the loss of the work role, as well as to develop a satisfactory lifestyle. These goals can be achieved by different measures. Post-retirement work and bridge jobs have been proposed as one way to achieve continuity after retirement (Kim & Feldmann, 2000). However, this could also be a simple delay of the retirement transition. Apart from work for pay, voluntary work can be another way to find meaning and
identity (Van den Boogard, Henkens & Kalmijn; 2014). Some studies show that people were more likely to start volunteering between two time points when they retired meanwhile (Mutchler, Burr, & Caro, 2003; Van den Boogard et al., 2014), but mostly, people just continue to do volunteer work when they have done this before, rather than starting a new activity (Mutchler et al., 2003).

Another possible way to adapt to retirement might be to increase one’s engagement in leisure activities, as discussed by Atchley (1971). As we know from previous studies, it is generally not common to start new activities at an older age. People rather seem to stick to the activities they have acquainted with over their life course until worsening health status and losses in resources force them to reduce their activity (e.g. Iwasaki & Smale, 1998; Strain, Grabusic, Searle, & Dunn, 2014). But retirement might constitute a turning point, when people need to increase their leisure activity to outweigh the losses of work related resources, such as social network, identity and physical activity. Some results provide support for this idea. A study by Janke, Davey and Kleiber (2006) found retirement to be associated with increases in overall reported informal leisure activity. Iwasaki and Smale (1998) found the same pattern for men, but not for women. Long (1987) reported similar results, but only the frequency of activity increased, not the number of activities. Nevertheless, in other studies, the overall leisure time activity kept stable over the transition (Bossé & Ekerdt, 1981; Agahi, Ahacic
& Parker, 2006; Seitsamo, 2007; Pushkar et al., 2010), at least for most indicators (Scherger, Nazroo & Higgs, 2010). Nimrod, Janke and Kleiber (2009) found the largest group of their sample to decrease their activity across the transition. Nimrod, Janke and Kleiber (2008) observed cultural differences between Israel and the USA: While in the USA continuity in leisure participation was most prominent, Israeli retirees reported an increased number of activities and increased frequency of leisure participation. Sprod et al. (2017) report that their Australian sample did not increase sociocultural activities across retirement, but rather increased passive activities as sleep or TV use.

Nimrod et al. (2009) also looked for a possible association between changes in leisure participation and well-being. They compared concentrators (retirees who increased their activity level in these activities they had engaged in before retirement), diffusers (retirees who increased their number of activities, but decreased or maintained their overall level of activity), expanders (retirees who increased their number of activities and their overall level of activity), and reducers (those who reduced their activity level and the number of activities). In this study, the concentrators showed higher scores of life satisfaction in retirement than all other groups, no other group differences reached significance. These findings are very interesting as they offer first evidence for the adaptivity of different strategies to organize post-retirement life style. Since this study did not include pre-retirement well-being,
however, we do not know the direction of the association between activity and well-being.
1.5 Personality and well-being across the retirement transition

As mentioned above, retirement research has mainly focused on external factors. Authors of review articles and chapters have claimed that internal, psychological factors have been neglected, but could play an important role in retirement adjustment (Shultz & Wang, 2011; van Solinge, 2012; Wang et al., 2011). Promising potential predictors include personality (Reis & Pushkar Gold, 1993; Robinson, Demetre, & Corney, 2010), mastery (Kim & Moen, 2002), and individual adjustment style (Hesketh et al., 2015; Kubicek et al., 2011). Wang and Shultz (2010) argue that individual factors can influence individual retirement planning, retirement decision making, and post-retirement lifestyle.

Personality is one of the most consistent predictors of well-being across the life span (Diener et al., 1999), even in the oldest old (Berg, Hassing, Thorvaldsson, & Johansson, 2011). Furthermore, personality moderates the impact of life events on well-being, but researchers have not found consistent effects of specific traits yet (Anusic, Yap, & Lucas, 2014; Boyce & Wood, 2011; Boyce, Wood, & Brown, 2010; Yap et al., 2012). Reis and Pushkar Gold (1993) have presented a model to understand the effect of personality on retirement adjustment. They build on the most prominent model of personality in psychological science, the Big Five (Goldberg, 1993).
This model constitutes five major personality traits: Neuroticism, extraversion, openness for new experiences, agreeableness, and conscientiousness.

According to Reis and Pushkar Gold’s (1993) model, personality might influence retirement adjustment via two different potential pathways. First, it might influence the situation people are in when retiring (Reis & Pushkar Gold, 1993). Personality could influence the retirees’ pre-retirement resources and the context of the transition. For example, Reis and Pushkar Gold (1993) assume that neurotic retirees should be less prepared and have less social support, while extraverted retirees should receive more social support. Conscientious retirees should be healthier and better prepared. Robinson et al. (2010) found that highly neurotic retirees were more likely to report negative reasons for retirement, while conscientiousness and openness correlated positively with aspirational motivation for retirement.

Furthermore, personality has been related to self-rated health in retirement age (Duberstein et al., 2003), life time income (Judge, Higgins, Thoresen, & Barrick, 1999), retirement wealth (Duckworth & Weir, 2010) and the need for disability pension (Blekesaune, & Skirbekk, 2012).

Second, personality might influence how people react to the challenges associated with retirement. Reis and Pushkar Gold (1993) assume that highly neurotic retirees would view retirement more negatively and would be more self-focused. Neuroticism should also be related to a negative
self-image, and lower coping skills. These factors would lead to difficulties with adjustment for neurotic retirees. Highly extraverted retirees, on the other hand, should view retirement more positively, be more active, establish new friendships, and find it easier to deal with retirement-related institutions and persons. Agreeable retirees should find it easier to find new friends in retirement as well. Reis and Pushkar Gold (1993) relate conscientiousness to better coping strategies and openness to an easier access to meaningful activities.

Little research has investigated the influence of personality on the retirement transition. Two cross-sectional studies have dealt with this issue. Robinson et al. (2010) found that agreeableness, conscientiousness and low neuroticism were correlated with well-being shortly after retirement. Löckenhoff et al. (2009) found that low neuroticism and high extraversion related to higher retirement satisfaction in recent retirees. As the studies are cross-sectional, they do not inform us if the effect of the actual retirement transition was moderated by personality, or if the differences in well-being were already present before retirement. In this thesis, the focus is on factors which moderate the effect of retirement. Hence, it is of major interest to examine which factors can explain why people differ in their reaction to retirement. Longitudinal studies are needed to understand if specific personality traits ease or hamper the transition.
To my knowledge only one study has used longitudinal data to address this issue (Kesavayuth, Rosenman & Zikos, 2016). The authors showed that while no significant moderating effects were found for men, the effect of retirement on well-being was more positive for women with high openness and/or low conscientiousness. The negative effect of conscientiousness does not fit to the model by Reis and Pushkar Gold (1993) mentioned above. There is no explanation of the findings in the paper; however, similar results have been presented with respect to the role of conscientiousness for the reaction to unemployment (Boyce, Wood, & Brown, 2010). In the latter study, the authors argue that conscientiousness might be associated with a particular bond to the work role and to the need to achieve success. Losing the work role and work-related success would have a stronger impact on conscientious individuals. We might assume that similar effects explain the findings of Kesavayuth et al. (2016): In their sample, conscientious retirees might have had problems with losing their work role and their work-related structure.

However, more research is needed to investigate if the findings from this study can be replicated in other samples and with other methods. Moreover, the Big Five (and personality itself) have not only been investigated as a combination of distinctive traits. Instead, researchers have often investigated the interaction among traits (e.g. Bardi & Ryff, 2007; Li, Mobley & Kelly, 2006; Pease & Lewis, 2015). Negative effects of certain
personality traits could be buffered by more positive traits. For example, the effect of neuroticism on retirement adjustment might differ, depending on the individual level of extraversion. On the other hand, there might also be specific negative effects, for example for retirees with high neuroticism and low openness. The inclusion of all possible two-, three-, four- or five-way interaction terms for the Big Five personality traits, however, would result in very complex patterns and is problematic to analyze statistically.

A promising approach to this problem comes from the research tradition of person-oriented developmental research (Bergman & Andersson, 2000; Bergman & Magnusson, 1997; Gerstorf, Smith, & Baltes, 2006; Smith & Baltes, 1997). As the name suggests, the focus of the person-oriented approach is on the person, as opposed to single variables. Researchers using this “holistic-interactionistic” (Bergman & Andersson, 2000) or “systemic-wholistic” (Gerstorf et al., 2006) approach view the person as a system of interacting elements (behaviors, attitudes, functioning…). The focus is not on one or two distinct variables, but on the individual profile, the “gestalt” which is derived from the combination and interaction of scores on different variables (Bergman & Magnusson, 1998). Depending on the number of variables included, there are an infinite number of possible profiles, and every individual will differ slightly on this profile. However, researchers following this approach mostly compare groups of people with similar patterns of covariation among important constructs. For example, Gerstorf et
Gerstorf et al. (2006) found three groups with distinctive profiles on cognitive functioning, personality, and loneliness, and predicted change in well-being as well as mortality by group membership. The authors argue that using these groups instead of the single variables “provides a more parsimonious picture of a complex system of functioning than is gained by a consideration of dimensions one by one […]” (Gerstorf et al., 2016, p.658).

When it comes to personality, person-oriented research implies that the focus should not be on scores on a single personality trait, but on the individual personality profile which arises from the interaction of different traits. Authors compare different “personality types”. This refers to groups of people who show comparable personality profiles, which means people who score similarly on the personality traits (see Donnellan & Robins, 2010; for a review). These subgroups are found in the data in a bottom-up approach, through analytical techniques that identify typical covariation between the traits and produce resulting groups. Cluster analysis or latent profile analysis are mostly used (Specht, Luhmann, & Geiser, 2014). In contrast to factor analysis, the focus is not on variables, but on the person: The aim is to identify underlying profiles within a sample, instead of finding underlying higher order constructs above the distinctive traits.

Recent studies using personality profiles have shown interesting effects with regard to psychological health (Merz & Roesch, 2011), health behavior (Zhang, Bray, Zhang, & Lanza, 2015), and also successful ageing
In many studies, three groups were found (see e.g. Block, 1971; Robins, John, Caspi, Moffitt, & Stouthamer-Loeber, 1996; Specht et al., 2014; Steca et al., 2010): “resilients”, “undercontrollers”, and “overcontrollers”. The exact group characteristics differ between studies. Often, undercontrollers score low on conscientiousness, openness and agreeableness (Dubas, Gerris, Janssens, & Vermulst, 2002; Klimstra, Hale, Raaijmakers, Branje, & Meeus, 2010). Overcontrollers often score low on extraversion, but high on neuroticism (Asendorpf, Borkenau, Ostendorf, & van Aken, 2001; Klimstra et al., 2010). Resilients show particularly low scores on neuroticism and high scores on the other traits (Robins et al., 1996; Specht et al., 2014). Resilients show most favorable outcomes in most studies, while overcontrollers and undercontrollers show differential negative effects (e.g. Steca, et al., 2010).

Using a person-oriented in addition to a variable-oriented approach to retirement adjustment might improve our understanding of the role of psychological factors for the retirement transition. To my knowledge, no earlier study has related retirement to personality types.
1.6 Challenges in the study of retirement adjustment

The next section relates to more practical aspects of research on retirement. When one wishes to study the effect of retirement, there are important challenges and decisions to be made. Below I list the major problems and possible solutions.

1.6.1 Defining retirement

Defining a person as retired can be a complicated issue (Ekerdt & de Viney, 1990; Denton & Spencer, 2009). In different contexts, retirement can mean completely different things, and it can be assessed in different ways (Denton & Spencer, 2009). Retirement is an economic, institutional and psychosocial transition. It can be defined either as the date people stop working completely, the date when people start to take out their retirement pension, or the time people start to identify themselves as a retired person. It is often implicitly assumed that these three events happen at the same date, but this is not true, especially in current times of diversified work lives and post-retirement employment.

For example, some studies define labor force inactivity in older age as retirement (e.g. Charles, 2004). The effects of retirement are assumed to be effects related to the loss of work. People who receive retirement benefits but still work to some extent would not be seen as retirees in these studies. Others
use the date people start to take out retirement pensions (e.g. Pinquart & Schindler, 2009). In these studies, people who do not work anymore and whomight already before their official retirement see themselves as retirees, are not considered retired. Finally, in many studies, retirement is seen as the time people define themselves as retirees (e.g. Drentea, 2002). This definition would include also working retirees, and older adults who do not receive any retirement benefits.

The appropriate definition of retirement depends on the research question. If the focus is on the absence from the labor market, people who get unemployed in old age could be included (Charles, 2004). If the focus is on the psychosocial transition, we might assume that the social status of unemployment differs strongly from the one of retirement, so people who get unemployed should experience completely different challenges than those who retire (Wetzel et al., 2015). On the other hand, people who continue to work in retirement might be included if it is the individual perception of retirement status that counts. But if the focus is on the absence of the work life and work status, they should not be integrated. In this thesis, I use two different conceptualizations of retirement. In the first article, I review studies from different countries on retirement, and so I also integrate different conceptualizations. Retirement can mean either the change in self-reported status, or the start of receiving old age pensions.
In the second article, I use the classical approach to retirement as both absence from the labor market and receiving public pensions, because the article is based on the Swedish pension system, where, even though the number of working retirees increases (Wadensjö, 2006), full-time retirement is still expected. Full-time retirement in line with the public pension system is the more traditional, supposedly normal way of retirement.

1.6.2 National context
Retirement must always be seen in its national context, as already implied in the last section. Countries differ strongly in their retirement regulations, which might influence retirement behavior (Börsch-Supan, Brugiavini, & Croda, 2009). In addition to the effect on retirement behavior, there are also effects on retirement adjustment and perceptions of retirement (Fouquereau, et al., 2005). These effects might partly relate to differences in the availability of financial resources for the older population in the respective countries, but also on differences in the availability of crucial non-financial resources, such as meaningful roles and social contacts for retirees. It is important to understand one’s results as being embedded in specific cultural norms and institutional regulations. The empirical study in this thesis (study II) is thus also specific to Swedish older adults and the Swedish pension system. Sweden has a rather egalitarian society with relatively little poverty in old age (Ebbinghaus & Neugenschwender, 2011). Sweden is a strong welfare state
with a high rate of working older adults, and, more specifically, also a high rate of older women participating in the labor force (König & Sjögren Lindquist, 2016). Sweden has a flexible retirement age; state benefits can be withdrawn already from the age of 61 with financial incentives for later withdrawal. While this allows some groups to more freely choose their timing of retirement, others may need to continue working in order to accumulate a sufficient pension income (König & Sjögren Lindquist, 2016). Hence, the challenges and opportunities in the Swedish system might be different from those in other societies.
1.6.3 Study design

Using observational data to understand causality is always problematic (Shadish, Cook & Campbell, 2002). However, since we are not able to introduce a randomized controlled study on the effects of retirement, researchers have to rely on observational data to investigate retirement adjustment.

Many researchers have simply compared retired people to a comparable working group in a cross-sectional design (Drentea, 2002; Horner, 2012; Warr, Butcher, & Robertson, & Callisan, 2004). Using such a design, unfortunately, there is no information on the pre-retirement well-being of retirees. The retirement event does not occur at the same age and under similar circumstances for all. It partly depends on the individual, on previous work life, health status and motives (Örestig, Strandh & Stattin, 2013). Differences in well-being between retirees and workers of the same age could stem from the fact that people with certain levels of well-being retire earlier, instead of retirement leading to problems in well-being. Furthermore, other factors could lead to both retirement and changes in well-being (Charles, 2004). Although researchers can control for a lot of obvious differences between workers and retirees that might determine both retirement status and well-being (e.g. age or health), unobserved third variables might account for both.
It seems to be more consequent to study change across retirement, assessing well-being before and after retirement. Longitudinal approaches seem to be more appropriate if we want to understand the effect of retirement. But then again, some longitudinal designs are better suited to disentangle individual change across retirement. A group of studies have included a pre-post design, with participants being asked about their well-being before and after retirement (e.g. Gall, Evans, & Howard, 1997; Gall & Evans, 2000; Karpas et al., 2013; Nuttman-Shwartz, 2004). The advantage of this design is that it provides information on how retirees feel before retirement. Unfortunately, some effects presumed to be effects of retirement might be “normal” age-related changes independent of whether participants continued to work or retire between measurement occasions. Figure 2 illustrates this problem with data from a fictitious study: In a pre-post comparison with only retiring participants, which would result only in the upper line, we would assume that retirement has a negative effect for well-being, since well-being decreases. But if we compare the retiring group to a working group (the lower line), we find lower decreases for those retiring, so retirement has a positive effect, buffering the general negative trend.
Moreover, if we integrate potential moderators of the effect of the retirement transition, we do not know if these factors are of specific importance in the retirement transition, or if they are just important for general well-being over the complete life span. To investigate this, we need to compare the effects during the retirement transition to effects in other life phases. If, for example, people scoring high on a personality trait show specific gains in life satisfaction across the retirement transition, this effect should be compared to the general effect of this personality trait on change in well-being over the life span.

A control group of people working or retired at both time points, like in Figure 2, might help in such a case (e.g. Kim & Moen, 2002). With this design, we can not only compare rates of change in well-being between retiring and not retiring participants, but also see which factors are of special importance for which group.

Figure 2. Change in well-being for people retiring or staying at work.
While researchers mostly control for baseline differences in age, health or other background factors, there might still be differences between the group retiring during the course of the study, and those not retiring. Those retiring between waves could already long before retirement have had different trajectories of change over time, so we might misinterpret the differences as being caused by retirement.

If enough waves of data are available, it is of considerable advantage to compare trajectories of within-person change before, during and after the retirement transition (e.g. Pinquart & Schindler, 2007; Wetzel et al., 2015). In studies on non-normative life events such as divorce (Lucas, 2005), a control group is often used to compare long-term trajectories, but this may be less suitable when it comes to retirement, since the overwhelming majority of people in Western countries will retire someday, and those who work until they die are most likely from special subgroups.

If third variables (e.g. a bad health, care obligations) cause both retirement and changes in well-being, findings might be misleading. These factors should be integrated in the analysis if possible. But many possible factors are often not available in the data, which leads to a correlation between the error term of the dependent variable (here well-being), and the independent variable (here retirement), which in turn violates an important assumption of standard OLS regressions. One way to deal with this is to use instrumental variable approaches (Charles, 2004; Heller-Sahlgren, 2016). In
these models, researchers use a variable that is not directly correlated to well-being, but to the choice to retire (for example typical retirement ages due to financial incentives). Using this method, it is possible to account for the correlation between regressor and error term, since the instrumental variable (age of retirement) should only be related to well-being via its effect to retirement.

1.6.4 Timing
Longitudinal analyses, controlling for important confounding variables, are clearly needed to draw conclusions about actual change. However, even with advanced ways of modeling change, in studies with longer time intervals between measurements, there is a risk of missing the onset of a decline or increase in well-being which already started before retirement. Moreover, adaptation most likely occurs after retirement (Atchley, 1976; Pinquart & Schindler, 2007; Reitzes & Mutran, 2004). Atchley (1976) assumed four phases of retirement adaptation: First, a so-called honeymoon should occur, i.e., an increase in wellbeing, due to a new freedom after retirement. But this phase should not be long lasting: A drop of well-being in a phase of disenchantment was assumed to follow, when the new post-retirement environment challenged the individual. Adaptation was expected afterwards, which would lead to relative stability over a longer period of time, until a
declining health and other age-related factors should lead to a declining well-being in the last phase of life (termination). Depending on the time point of assessment of post-retirement well-being, one might capture people in different phases and find a positive (honeymoon), negative (disentchantment/termination) or no effect (stability).

Distinguishing short- and long-term effects is crucial to get a clearer picture of different processes associated with retirement. Many papers are based on surveys with biennial measurements (e.g. Midanik, Soghikian, Ransom, & Tekawa, 1995; Latif, 2011; Wang, 2007), which might be problematic, because short-term effects can be overlooked.
1.7 Preliminary summary

The retirement transition can be seen as a multilevel process (Szinovacz, 2012). Findings imply a large heterogeneity in the effect of retirement, and many potentially fruitful theories can be applied to understand differential effects of retirement (Wang, 2007). The recently introduced resource model of retirement adjustment (Wang et al., 2011) can be seen as a first step towards interdisciplinary instead of multidisciplinary research on the retirement transition. However, it occurs that relatively little psychological research has been conducted on the transition. Personality, adjustment styles and adaptive actions have rarely been integrated in recent studies, and little is known about retirees as active co-constructors of their own post-retirement life (Wang et al., 2011).
1.8 Overall aims

The focus of the present licentiate thesis is on heterogeneity in the effects of retirement on well-being. The overall aim is to shed light on the complicated relationship of retirement and well-being, as well as potential moderators and mediators. This thesis should provide with information on potential risk factors and resources for a positive retirement transition. Concrete aims and research questions for the two articles are explained further below.
Chapter 2
Chapter 2
Summary of the studies

2.1 Study I

2.1.1 Aims

The first article is a review on the effects of retirement on well-being and potential moderators that have been identified in longitudinal studies. Considering the large sum of articles in the field, especially in the last decade (e.g. Dave et al., 2008; Karpas et al., 2013; Latif, 2011; Pinquart & Schindler, 2007; Wang, 2007; Wetzel et al., 2015), contradictory findings on the effect of retirement, opposed theoretical approaches and design problems, a structured review seemed appropriate. The influential reviews from Wang and colleagues (Shultz & Wang, 2011; Wang et al., 2011; Wang & Shi, 2014) are very beneficial for understanding the theoretical background of retirement adjustment research, but did investigate retirement adjustment in general, instead of change across the transition. In another recent review (van der Heide, van Rijn, Robroek, Burdorf, & Proper, 2013), the effects of retirement on health in general, also mental health, were studied. However, few studies were included and potential moderators were not investigated. The effects of retirement on well-being have also already been included in a meta-analysis
(Luhmann et al., 2012). However, in this study, only very few moderators were considered, and a number of new studies have been published since 2012 (e.g. Abolhassani & Alessie, 2013; Calvo et al., 2013; Hershey & Henkens, 2014; Wetzel et al., 2015…). The aim of the present review is to structure and present recent findings on the main effect of retirement on well-being as well as potential moderators and mediators. Furthermore, the review should highlight potential research gaps and guide to potential future empirical studies.

2.1.2 Research Questions

The study had three main research questions. The first was if retirement was mainly accompanied by losses, gains, or continuity in well-being in the reviewed studies.

The second research question was which moderators had been identified in the studies. Moderators could be found on different levels, as suggested by the multilevel perspective on retirement (Szinovacz, 2012). Moderators were also investigated at a meta-level; we investigated if studies with different methods, from different countries, with different time intervals between assessments, or with different measures of well-being found systematically different results.
The third research question was if mediators of the effect could be identified. In light of the resource approach, mediators of the effect of retirement should be changes in important resources (Wang et al., 2011).

2.1.3 Method

For this review, we searched the data bases PsycInfo, Pubmed, and Google Scholar for articles on change in well-being across the retirement transition. The review was conducted in winter 2015/2016, so most recent articles (e.g. Heller-Sahlgren, 2016; Kesavayuth et al., 2016) are not included.

Keywords for the search were retirement transition, combinations of retirement with health, happiness, life satisfaction, stress, depression, and well-being. We also used “reasons for retirement” and “retirement adjustment”. Articles were included in the review if the following criteria were met:

1. The studies needed to be longitudinal studies, because the focus was on change in well-being.
2. Well-Being needed to be assessed at least once before, and once after retirement, with the same measure.
3. Studies were only integrated if they were published not earlier than 1990, to ensure that findings related to more recent developments.
4. Retirement was defined as a change to self-reported retirement, or receiving retirement pensions. Unemployment in older age was not included.

5. Both eudaimonic and hedonic well-being measures were included. Single emotions such as anger were not included in the study, in line with the meta-analysis by Luhmann et al. (2012). We also did not include diagnoses of mental disorders.

In total, we identified 32 studies meeting our inclusion criteria. Studies included used single group pre-post comparisons of well-being before and after retirement (Mayring, 2000), control group designs (Kim & Moen, 2002) or longitudinal regression modeling such as fixed or random effects models (Calvo et al., 2013), growth curves (Pinquart & Schindler, 2007) or latent change score models (Wetzel et al., 2015). We did not perform further quality assessment, or meta-analytical procedures, so this is not a systematic review according to the PRISMA criteria (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009). We did, however, structure findings and present and interpret them in a comprehensive way that gives an overview on the field. Table 1 gives an overview on the reviewed studies.
<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Name of Survey (if known)</th>
<th>N</th>
<th>Number of Assessments</th>
<th>Time between Assessments</th>
<th>Design</th>
<th>Outcomes</th>
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<td>Abolhassani &amp; Alessie, 2013</td>
<td>Germany</td>
<td>German Socioeconomic Panel (GSOEP)</td>
<td>10,275</td>
<td>15</td>
<td>Annually</td>
<td>LM</td>
<td>Life Satisfaction</td>
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<td>Health and Retirement Study (HRS)</td>
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<td>LM</td>
<td>Happiness</td>
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<td>LM</td>
<td>Depression</td>
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<td>Calvo &amp; Sarkisian, 2014</td>
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<td></td>
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<td>Author(s)</td>
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<td>Wave Duration</td>
<td>Data Frequency</td>
<td>Wave Change</td>
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<tr>
<td>Clark &amp; Fawaz, 2009</td>
<td>Europe</td>
<td>Survey of Health, Ageing and Retirement in Europe (SHARE) *</td>
<td>722</td>
<td>2</td>
<td>1-3 years</td>
<td>PP</td>
<td>Depression</td>
</tr>
<tr>
<td>Dave et al., 2008</td>
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<td>HRS</td>
<td>77,194</td>
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<td>Biennially</td>
<td>LM</td>
<td>Depression</td>
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<td>Dingemans &amp; Henkens, 2015</td>
<td>Netherlands</td>
<td>Work and Retirement Panel</td>
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<td>3</td>
<td>5 years</td>
<td>LM</td>
<td>Life Satisfaction</td>
</tr>
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<td>Gall &amp; Evans, 2000</td>
<td>USA</td>
<td>Retirement Research Study</td>
<td>109</td>
<td>2</td>
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<td></td>
<td></td>
<td>6-7 years</td>
<td>postretirement</td>
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</table>

* SHARE = Survey of Health, Ageing and Retirement in Europe
Gall et al., 1997
USA
Retirement Research Study
117
3
2–4 months PP Life Satisfaction, preretirement, 1 year post-retirement, 6–7 years post-retirement

Gayman et al., 2013
USA HRS 3,264 7 Biennially LM Depression

Hershey & Henkens, 2014
Netherlands Work and Retirement Panel
1,388 2 5 years LM Life Satisfaction

Heybroek et al., 2015
Australia Household, Income and Labor Dynamics in Australia survey (HILDA)
724 11 Annually LM Life Satisfaction
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<th>Sample Size</th>
<th>Follow-Up Duration</th>
<th>Methodology</th>
<th>Outcome Measures</th>
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<td>Iwasaki &amp; Smale, 1998</td>
<td>Canada</td>
<td>Canada Fitness Survey/Campbell’s Survey on Well-Being in Canada (follow up)</td>
<td>2,428 (71 retiring)</td>
<td>7 years</td>
<td>LM</td>
<td>Positive and negative affect</td>
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<tr>
<td>Karpas et al., 2013</td>
<td>USA</td>
<td>257</td>
<td>3</td>
<td>&lt; 6 months pre-retirement; 7 years post-retirement</td>
<td>PP</td>
<td>Depression</td>
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<td>Kim &amp; Moen, 2002</td>
<td>USA</td>
<td>Cornell Retirement and Well-Being Study</td>
<td>458</td>
<td>2 years</td>
<td>CG</td>
<td>Morale</td>
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<td>Waves</td>
<td>Study Duration</td>
<td>Method</td>
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<td>Wisconsin Longitudinal</td>
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<td>2</td>
<td>11 years</td>
<td>PP</td>
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<td>Canada</td>
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<td>22,040</td>
<td>7</td>
<td>Biennially</td>
<td>LM</td>
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<td>Mayring, 2000</td>
<td>Germany</td>
<td>Übergänge in den Ruhestand</td>
<td>329</td>
<td>3</td>
<td>6 months pre-retirement</td>
<td>PP</td>
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<td>Midanik et al., 1995</td>
<td>USA</td>
<td>Kaiser Permanent Retirement Study</td>
<td>595</td>
<td>2</td>
<td>2 years</td>
<td>CG</td>
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<td>---------------</td>
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<td>-----------------------</td>
</tr>
<tr>
<td>Mojon-Azzi et al., 2007</td>
<td>Switzerland</td>
<td>Swiss Household Panel</td>
<td>523</td>
<td>5</td>
<td>Annually</td>
<td>CG</td>
</tr>
<tr>
<td>Nuttman-Shwartz, 2004</td>
<td>Israel</td>
<td>56</td>
<td>2</td>
<td>6 months pre-retirement, 12 months post-retirement</td>
<td>PP</td>
<td>Well-Being, Stress</td>
</tr>
<tr>
<td>Pinquart &amp; Schindler, 2007</td>
<td>Germany</td>
<td>GSOEP</td>
<td>1,456</td>
<td>3-20</td>
<td>Annually</td>
<td>LM</td>
</tr>
<tr>
<td>Reitzes et al., 1996</td>
<td>USA</td>
<td>Carolina Health and Transitions Study</td>
<td>826</td>
<td>2</td>
<td>2 years</td>
<td>CG</td>
</tr>
<tr>
<td>Rhee et al., 2015</td>
<td>USA</td>
<td>HRS</td>
<td>1,195</td>
<td>2</td>
<td>Biennially</td>
<td>LM</td>
</tr>
<tr>
<td>Seitsamo, 2007</td>
<td>Finland</td>
<td>3,185</td>
<td>4</td>
<td>4, 5, and 7 years</td>
<td>LM</td>
<td>Positive and negative affect</td>
</tr>
<tr>
<td>Authors</td>
<td>Location</td>
<td>Study</td>
<td>Sample Size</td>
<td>Length (Years)</td>
<td>Testing Frequency</td>
<td>Method</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------</td>
<td>-------</td>
<td>-------------</td>
<td>----------------</td>
<td>------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Szinovacz &amp; Davey, 2004a</td>
<td>USA</td>
<td>HRS</td>
<td>2,695</td>
<td>4</td>
<td>Biennially</td>
<td>LM</td>
</tr>
<tr>
<td>Szinovacz &amp; Davey, 2004b</td>
<td>USA</td>
<td>HRS</td>
<td>2,649</td>
<td>4</td>
<td>Biennially</td>
<td>LM</td>
</tr>
<tr>
<td>Szinovacz &amp; Davey, 2006</td>
<td>USA</td>
<td>HRS</td>
<td>2,681</td>
<td>4</td>
<td>Biennially</td>
<td>LM</td>
</tr>
<tr>
<td>De Vaus et al., 2007</td>
<td>Australia</td>
<td>Healthy Retirement Project</td>
<td>385</td>
<td>4</td>
<td>7 days pre-retirement, 12 months post-retirement, 24 months post-retirement, 36 months post-retirement</td>
<td>PP</td>
</tr>
<tr>
<td>Wang, 2007</td>
<td>USA</td>
<td>HRS</td>
<td>Sample 1=994</td>
<td>5</td>
<td>Biennially</td>
<td>LM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sample 2=1,066</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Country</td>
<td>Dataset</td>
<td>N</td>
<td>T</td>
<td>Frequency</td>
<td>Methodology</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------</td>
<td>----------</td>
<td>-----</td>
<td>-----</td>
<td>-----------</td>
<td>--------------</td>
</tr>
<tr>
<td>Wetzel et al., 2015</td>
<td>Germany</td>
<td>GSOEP</td>
<td>3,361</td>
<td>27</td>
<td>Annually</td>
<td>LM</td>
</tr>
<tr>
<td>Yeung, 2013</td>
<td>Hong Kong</td>
<td></td>
<td>90</td>
<td>2</td>
<td>6 months pre-retirement, 6 months post-retirement</td>
<td>PP</td>
</tr>
</tbody>
</table>

*Note. CG = control group, PP = pre/post comparison, LM = longitudinal modeling.*

Survey was used in this study as well, but not included in this review because the measure did not fit our criteria.
2.1.4 Results

2.1.4.1 Main Effects

Most of the reviewed studies show stability in well-being, or even increases across the transition (see Table 2). Only two studies reported overall losses in well-being (Calvo & Sarkisian, 2014; Dave et al., 2008). However, many studies found different effects for different groups. This makes the investigation of moderators particularly interesting.

<table>
<thead>
<tr>
<th>Effect</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>Kubicek et al., 2011 (depression); Midanik et al., 1995 (stress), Mojon-Azzi et al., 2007; Nuttman-Shwartz, 2004 (stress); Reitzes et al., 1996; Seitsamo, 2007; Wetzel et al., 2015; Stress (short-term)</td>
</tr>
<tr>
<td>Negative</td>
<td>Calvo &amp; Sarkisian, 2014; Dave et al., 2008; Kubicek et al., 2011 (psychological well-being); Stress (long-term)</td>
</tr>
<tr>
<td>Stability</td>
<td>Abolhassani &amp; Alessie, 2013; Gall &amp; Evans, 2000; Gall et al.,</td>
</tr>
</tbody>
</table>
1997 (life satisfaction); Iwasaki & Smale, 1998; Kim & Moen, 2002; Mayring, 2000; Midanik et al., 1995 (depression); Nuttman-Shwartz, 2004 (well-being); Szinovacz & Davey, 2006; Yeung, 2013

<table>
<thead>
<tr>
<th>No main effect reported</th>
<th>Karpas et al., 2013; De Vaus et al., 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direction depends on subgroup</td>
<td>Calvo et al., 2009; Calvo et al., 2013; Clark &amp; Fawaz, 2009; Dingemans &amp; Henkens, 2015; Gayman et al., 2013; Hershey &amp; Henkens, 2014; Heybroek et al., 2015; Latif, 2011; Pinquart &amp; Schindler, 2007; Szinovacz &amp; Davey, 2004a; Szinovacz &amp; Davey, 2004b; Wang, 2007</td>
</tr>
</tbody>
</table>

2.1.4.2 Moderators

Study level. On the study level, neither method, nor timing of assessment, nor country of origin of the sample made a systematic difference for the effect. Interestingly, the few studies that compared long- and short-term effects of
retirement did not show uniform patterns (Gall et al., 1997; Pinquart & Schindler, 2007; Wetzel et al., 2015). When it comes to measures used, depressive symptoms seem to be more sensitive to change than life satisfaction, which is in contrast to an earlier finding by Luhmann et al. (2012) who found that retirement influenced cognitive, but not affective well-being in the reviewed studies. Stress seems to decrease after retirement (Gall et al., 1997; Midanik et al., 1995; Nuttman-Shwartz, 2004).

Sociodemographic differences. The retirement transition seems to affect men and women differently. Women have been found to experience more negative outcomes after retirement (Dave et al., 2008; Pinquart & Schindler, 2007). Furthermore, moderators of the retirement transition differ between women and men: While social contacts and marital quality have been found to be more important for women’s post-retirement well-being (Kim & Moen, 2002; Kubicek et al., 2011), job factors and income matter more for men (Kim & Moen, 2002; Kubicek et al., 2011). If one’s spouse experienced a decline in activities of daily living during the transition, this affected women more than men (Szinovacz & Davey, 2004a), most likely because women are more likely to care for their disabled partner than men. The effect of a joint retirement is less long lasting for women (Szinovacz & Davey, 2004a).

Older age at retirement has been associated to more positive changes in well-being across retirement (Heybroek et al., 2015; Latif, 2011; Pinquart &
Schindler, 2007), which is probably at least partly related to social norms (Van Solinge & Henkens, 2007): Retirement later than the “normal” retirement age does not offer additional benefits (Calvo et al., 2013).

Findings with regard to socioeconomic status are mixed (Mayring, 2000; Pinquart & Schindler, 2007). Higher education has been related to more positive outcomes (Clark & Fawatz, 2009; Wetzel et al., 2015).

One study found that in the U.S., the positive effect of retirement for white people cannot be found for African-American retirees (Gayman, Pai, Kail, & Taylor, 2013).

Health. Findings with regard to health are mixed: On the one hand, sick retirees might experience retirement as a relief, as suggested by Pinquart and Schindler (2007). On the other hand, findings of other studies suggest the opposite, and authors argue that a good health is important to deal with tasks and challenges around retirement (Kim & Moen, 2002; Kubicek et al., 2011; Wang, 2007).

Context of retirement. Different studies showed that the voluntariness of retirement is of crucial importance for the effect of retirement: A forced retirement, for example for health or organizational reasons, is associated with more negative outcomes (Calvo, Haverstick, & Sass, 2009; Dingemans
& Henkens, 2015; Hershey & Henkens, 2014; Rhee, Mor Barak, & Gallo, 2015; Szinovacz & Davey, 2004b, de Vaus, Wells, Kendig, & Quine, 2007).

Work life. In line with predictions from role theory (Taylor-Carter & Cook, 1995) and resource approach (Wang et al., 2011), a more negative work life is often found to be related to a positive effect of retirement: People who were unemployed before retirement, (Pinquart & Schindler, 2007; Wetzel et al., 2015), working part-time or in “less attractive” jobs (Clark & Fawaz, 2009), who were dissatisfied with their work, or experienced their job as stressful and physically demanding (Wang, 2007), are likely to experience increases in well-being after retirement. At the same time, factors that show a positive role of the job, such as stronger attachment to the workplace and job satisfaction, are related to more negative outcomes (Kubicek et al., 2011).

Psychosocial characteristics. Social support seems to facilitate retirement adjustment (Dave et al., 2008), as does marriage (Pinquart & Schindler, 2007; Wang, 2007), especially if the partner retires at the same time (Szinovacz & Davey, 2004a), as long as there are no marital problems (Wang, 2007). Kubicek et al. (2011) found that tenacity in goal pursuit and flexibility in goal adjustment are related to more positive outcomes. Attachment avoidance was associated with greater losses in well-being in retirement in a study by Karpas et al. (2013). Attachment avoidance also moderated the impact of
financial losses, so for those with higher scores, the losses were stronger connected to losses in well-being (Karpas et al., 2013). Higher pre-retirement mastery predicts better post-retirement outcomes (Kim & Moen, 2002). Interestingly, at the time the review was conducted, no study on the Big Five personality traits was available.

Adaptive actions. Little is known about adaptive actions around retirement. Wang (2007) found pre-retirement planning to be associated with a higher post-retirement well-being, but it seems like this effect is restricted to specific kinds of planning: In a study by Yeung (2013), only psychological planning was positive for well-being, while planning of many social activities was associated with higher distress after retirement. One study found that a change in physically active leisure activity was not associated with changes in well-being (Iwasaki & Smale, 1998), while a study by Dave et al. (2008) found physical activity to have a positive effect. If people engage in bridge employment before full retirement, this might also improve post-retirement outcomes (Wang, 2007). Those bridge jobs might be of particular help if people retired involuntarily (Dingemans & Henkens, 2015).

2.1.4.3 Mediators

Within the framework of the resource approach (Wang et al., 2011), the effect of retirement should relate to changes in resources. In statistical terms,
resource changes should thus be the mediator of the effect of retirement. Even though no actual mediation analyses have been conducted, the resource model is indirectly supported by studies relating changes in well-being to changes in income (Karpas et al., 2013), financial control (Rhee et al., 2015), and perceived control (Kim & Moen, 2002). Furthermore, those women whose partner experienced losses in activities of daily living, experience stronger losses in well-being (Szinovacz & Davey, 2004b), which is probably also related to a loss in resources for these women. On the other hand, a release from grandchild care obligation, which offers time for leisure activities, is related to gains in well-being (Szinovacz & Davey, 2006).
2.2 Study II

2.2.1 Aims

In the literature review (study I), it was remarked that no study had investigated personality as a moderator of the effect of retirement on change in well-being. The aim behind study II was to fill this gap. As noted in the background section, after study I was accepted for publication, one longitudinal study on personality in the retirement transition has been published (Kesavayuth et al., 2016). Nevertheless, we inspected the usefulness of an alternative approach to personality, using personality types, and we also used another method to study change.

2.2.3 Research Questions

The study had three main research questions. The first one was if retirement has an effect on change in well-being in a Swedish sample of older adults. I am aware of only one Swedish study on this subject (Halleröd, Örestig & Stattin, 2013) but the authors of that study did not use life satisfaction or another established indicator of well-being, but a latent factor of different indicators related to psychological health. Furthermore, they did not include a control group, and so the distinct effect of retirement in this sample is unclear. We were interested if retirement would be associated with
more positive changes in life satisfaction compared to working participants, as in some studies reviewed above. We wanted to integrate both continuously working and retiring participants in our analysis to shed light on the actual effect of retirement.

Second, we aimed to identify personality types in the data. We were interested to see if a latent profile analysis on Big Five personality traits resulted in meaningful subgroups with distinct profiles of personality.

Finally, we investigated if personality moderated the effect of retirement on change in well-being. More specifically, we wanted to know if the effect of retirement was different for people with different personality types, and if the results of type-focused models were more parsimonious than trait-focused models.

2.2.3 Method

2.2.3.1 Sample

Study II was based on data from the “Health, Ageing, and Retirement Transitions in Sweden” (HEARTS) study. HEARTS is an ongoing longitudinal study on retirement transitions with annual follow-ups. The questionnaire includes questions on sociodemographic information, work, retirement, psychological and physical health, leisure, social network, attitudes, cognitive performance, and personality. The study is conducted
online, using the test platform “Qualtrics”. For those reluctant or not able to fill in the questionnaire online, a paper version is provided, which is identical to the online version, but does not include the cognitive tests.

A nationally representative sample was drawn from the Swedish population registry SPAR (Statens Person Register) in April 2015. Every person who is registered in Sweden is included in the SPAR registry. Our sample consisted of 14,990 persons aged 60-66. These people were contacted in late spring 2015 via letters and around 40% (N=5,913) participated during the summer 2015. At the first follow-up in 2016, n=4,651 participated again (78.7%).

Since we used full information maximum likelihood estimation (FIML) to deal with missing values, we were able to include both participants who participated in both waves, and those who only participated at T1. We wanted to compare retiring to not retiring participants, so we excluded those without a valid retirement status, or those who were already retired at T1 (n=2,121). Furthermore, we excluded those who did not work before retirement (n=653), because people who make the transition from unemployment to retirement are likely to have different experiences (Wetzel et al., 2015). We further excluded those without valid personality scores to base personality types on (n=342). This adds up to n=2,797 participants in the latent profile analysis. However, in the analysis on change in well-being,
only \( n = 2.655 \) were included, because missing values on the other variables cannot be completely imputed with FIML.

2.2.3.2 Measures

*Well-being* was assessed with the satisfaction with life scale (Diener, Emmons, Larsen, & Griffin, 1984). This scale is based on 5 items on a 6-point Likert scale. Reliability was \( \alpha = .92 \) for both time points. We constructed latent factors for well-being at both times points.

*Retirement* was assessed using the question “Are you retired (started to take out old age pension)?” Participants could reply (a) no; (b) yes, but working and consider myself a worker; (c) yes, and working at the same time, but consider myself a retiree; (d) yes, full-time retiree. We coded only full retirement as retirement, because the other groups would still participate in the labor force. 268 persons retired between waves.

*Personality* was assessed using the Mini IPIP (Donnellan et al., 2006). The scale is a short form of the IPIP International Personality Item Pool (Goldberg, 1999) and assesses the Big Five traits with four items per trait on a 5-point Likert scale. We z-scored all scales because with z-scores, all scales have the same mean and standard deviation, which allows a more straightforward comparison of profiles and effect sizes. The reliabilities were \( \alpha = .62 \) for openness, \( \alpha = .62 \) for conscientiousness, \( \alpha = .76 \) for extraversion, \( \alpha = .65 \) for agreeableness, and \( \alpha = .62 \) for neuroticism.
**Covariates.** We included years of education, age, number of diseases, gender and job rank at the first assessment as covariates in the model. The number of diseases ranged from 0 to 22. Gender was coded 0 = male and 1 = female. Job rank was assessed by one item as well (1 = personnel responsibility for more than 30 persons, 2 = responsibility for 10–30 persons, 3 = responsibility for 1–10 persons, 4 = no responsibility). Higher values represent lower job rank.

2.2.3.2 Analysis

To answer our first research question, we inspected baseline differences and change in well-being between the two assessments using a latent change score model (McArdle, 2009) in MPlus 7.4 (Muthén & Muthén, 2015). In this model, well-being at the two time points is modelled as baseline well-being and change in well-being, and both can be predicted separately. Missing values were imputed using FIML. Latent factors were constructed from the well-being items. Measurement invariance across time was tested by comparing the fit of different models on CFI, since Chi² scores are likely to be distorted by our large sample size (Milton & Fischer, 2010). According to recent recommendations, we defined a significant decrease in fit if the CFI decreased more than .002 (Meade, Johnson, & Braddy, 2008).

Baseline and change in the best-fitting model were then predicted by retirement and covariates.
To answer our second research question, we conducted a latent profile analysis in MPlus, identifying specific personality types. In a latent profile analysis, groups with distinct patterns of covariation among variables of interest are derived from the data. The researcher can test different possible numbers of groups and compare competing models in terms of statistical fit and theoretical value (Marsh, Lüdtke, Trautwein, & Morin, 2009). We started with a two class model and continued with increasing numbers of classes. We used Bayesian Information Criterion (BIC), the sample size adjusted BIC, and the entropy (accuracy of profile classifications) as fit indices (Nylund, Asparouhov, & Muthén, 2007), and tested the benefits of further classes with the adjusted Lo-Mendell-Rubin test. Furthermore, we looked at the size of classes, since too small classes (<5%) are believed to show that too many classes have been constructed (Merz & Roesch, 2011).

Finally, group membership among personality types (as dummy variables) was included in further latent change score models as an additional predictor of baseline well-being and change in well-being. To answer our third research question, interaction effects between retirement and personality types were added. These models were repeated with personality traits instead of types to compare person-oriented to variable-oriented analysis.
2.2.4 Results

Table 3 shows descriptive results of the study variables.

Table 3. Means and Standard Deviations

<table>
<thead>
<tr>
<th>Measure</th>
<th>M (SD)</th>
<th>Valid N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well-Being (T1)</td>
<td>4.4 (0.03)</td>
<td>2.796</td>
</tr>
<tr>
<td>Well-Being (T2)</td>
<td>4.42 (0.03)</td>
<td>2.796</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>2.33 (0.80)</td>
<td>2.797</td>
</tr>
<tr>
<td>Extraversion</td>
<td>3.24 (0.92)</td>
<td>2.796</td>
</tr>
<tr>
<td>Openness</td>
<td>3.45 (0.83)</td>
<td>2.796</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>3.93 (0.70)</td>
<td>2.796</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>3.98 (0.72)</td>
<td>2.797</td>
</tr>
<tr>
<td>Age</td>
<td>62.18 (1.72)</td>
<td>2.779</td>
</tr>
<tr>
<td>Number of diseases</td>
<td>5.14 (3.67)</td>
<td>2.797</td>
</tr>
<tr>
<td>Education (years)</td>
<td>13.82 (3.59)</td>
<td>2.719</td>
</tr>
<tr>
<td>Job rank (1-5)</td>
<td>3.70 (0.71)</td>
<td>2.759</td>
</tr>
<tr>
<td>Female participants</td>
<td>54%</td>
<td>2.780</td>
</tr>
</tbody>
</table>
2.2.4.1 Retirement and well-being

We first computed a latent change score model on change in well-being. We started with a test of measurement invariance across time, and found that a model with strict measurement invariance did not result in decreases in fit compared to models with configural, weak or strong invariance. The model fit was very good (CFI = .97, TLI = .95, RMSEA = .09, \( \chi^2(39) = 1027.68, p < .001 \), SRMR = .03).

We constructed a latent change score model without predictors to investigate how well-being developed over time (\( n=2.796 \), CFI = .96, TLI = .95, RMSEA = .09, 95% CI [0.087; 0.097], \( \chi^2(42) = 1031.76, p < .001 \), SRMR = .03). The mean well-being at T1 was 4.4 (\( p<.001; \sigma^2=1.51 \)) and there was no significant change in well-being between assessments, (\( M=0.02, p=.38 \)), but there was a significant variance in change (\( \sigma^2=0.75, p<.001 \)).

We then added predictors to the model (Table 4). Retirement had no positive impact on baseline well-being but on change in well-being. This means that those who were about to retire did not differ in well-being from the other participants at the first time point, but they experienced more positive changes in well-being across waves. The large negative effect of well-being at the first time point on change in well-being probably relates to regression to the mean (Bland & Altman, 1994), and the significance of this effect relates to the fact that well-being shows a skewed distribution in our
sample: Relatively many people have a rather high well-being, and if their well-being fluctuates over time, there is little space above, but more below their baseline level of well-being.

**Table 4. Baseline and Change in Well-Being**

<table>
<thead>
<tr>
<th></th>
<th>Baseline Estimate (SE)</th>
<th>Change Estimate (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>4.97 (0.86)***</td>
<td>2.42 (0.73)***</td>
</tr>
<tr>
<td>Well-Being T1</td>
<td>-</td>
<td>-0.28 (0.02)***</td>
</tr>
<tr>
<td>Retirement between</td>
<td>0.12 (0.08)</td>
<td>0.25 (0.06)**</td>
</tr>
<tr>
<td>waves</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diseases</td>
<td>-0.13 (0.01)***</td>
<td>-0.04 (0.01)***</td>
</tr>
<tr>
<td>Education</td>
<td>0.01 (0.01)</td>
<td>0.002 (0.01)</td>
</tr>
<tr>
<td>Gender (female)</td>
<td>0.08 (0.05)</td>
<td>0.07 (0.04)</td>
</tr>
<tr>
<td>Age</td>
<td>0.003 (0.01)</td>
<td>-0.02 (0.01)</td>
</tr>
<tr>
<td>Job rank</td>
<td>-0.07 (0.03)</td>
<td>-0.02 (0.03)</td>
</tr>
</tbody>
</table>

**Note.**

N=2,655. *p<.05 **p<.01 ***p<.001

Fit indizes:

CFI = .96, TLI = .95, RMSEA = 0.06, 95% CI[.06; .07], Chi²(90) = 1078.14, p < .001, SRMR = .03; \( R^2 = .16 \) for baseline well-being, \( R^2 = .14 \) for change in well-being.
2.2.4.2 Personality types

We proceeded by investigating personality types in our data sample. Based on the fit indices and group characteristics, we selected a four-type solution for further analysis (see table 4). We based this decision on the fact that although BIC and SSA-BIC, as well as the adjusted LMR test suggest that the five type solution shows a better fit, the five type solution includes a very small group.

Table 5. Latent profile analysis: Fit indices.

<table>
<thead>
<tr>
<th>Models</th>
<th>Log-likelihood</th>
<th>BIC</th>
<th>SSA-BIC</th>
<th>Entropy</th>
<th>Adjusted LMR test</th>
<th>Number of classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 class</td>
<td>-19704.54</td>
<td>39488.43</td>
<td>39456.66</td>
<td>1</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2 classes</td>
<td>-19303.06</td>
<td>38733.11</td>
<td>38682.27</td>
<td>0.57</td>
<td>786.43*</td>
<td>0</td>
</tr>
<tr>
<td>3 classes</td>
<td>-19219.28</td>
<td>38613.16</td>
<td>38543.26</td>
<td>0.67</td>
<td>164.11*</td>
<td>0</td>
</tr>
<tr>
<td>4 classes</td>
<td>-19154.91</td>
<td>38532.03</td>
<td>38443.06</td>
<td>0.63</td>
<td>126.11*</td>
<td>0</td>
</tr>
<tr>
<td>5 classes</td>
<td>-19120.33</td>
<td>38476.55</td>
<td>38368.52</td>
<td>0.66</td>
<td>100.97*</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. N=2.797 *p < .05.
The resulting four groups are illustrated in figure 3 and table 6.

![Figure 3. Mean scores on personality traits in the four groups.](image)

We found one large group (40%) with below-average neuroticism, but above-average extraversion, openness, agreeableness and conscientiousness. This group was labelled “resilients”, since it shares characteristics with a group identified in previous studies that has been labeled like this (see Specht et al., 2014). A second group was of comparable size (37.1%), but showed low levels in openness, agreeableness and extraversion, and rather average levels of neuroticism and conscientiousness. We labelled them “withdrawn”. A third group showed high values in openness, but particularly low in conscientiousness, which is why we called them “free spirits”. They scored slightly above average on agreeableness and close to average on extraversion. A final smaller group (8.7%) scored below
average on extraversion and openness, and particularly low on agreeableness and conscientiousness, but above average on neuroticism, which is why we called them “undercontrollers”.

Table 6. Personality types

<table>
<thead>
<tr>
<th>Measure</th>
<th>Resilients</th>
<th>Withdrawn</th>
<th>Free Spirits</th>
<th>Undercontrollers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 1.140)</td>
<td>(n = 1.067)</td>
<td>(n = 389)</td>
<td>(n = 201)</td>
</tr>
<tr>
<td>M (SE)</td>
<td>M (SE)</td>
<td>M (SE)</td>
<td>M (SE)</td>
<td>M (SE)</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>-0.27 (0.04)</td>
<td>0.09 (0.04)</td>
<td>0.03 (0.07)</td>
<td>0.41 (0.08)</td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.53 (0.07)</td>
<td>-0.45 (0.06)</td>
<td>0.16 (0.08)</td>
<td>-0.65 (0.09)</td>
</tr>
<tr>
<td>Openness</td>
<td>0.40 (0.05)</td>
<td>-0.45 (0.05)</td>
<td>0.57 (0.09)</td>
<td>-0.52 (0.08)</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>0.67 (0.05)</td>
<td>-0.49 (0.1)</td>
<td>0.44 (0.06)</td>
<td>-1.25 (0.15)</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>0.53 (0.04)</td>
<td>0.12 (0.07)</td>
<td>-1.24 (0.09)</td>
<td>-1.43 (0.16)</td>
</tr>
</tbody>
</table>

*Note.* Scores are z-scored with a mean of 0 and a standard deviation of 1.
2.2.4.3 Personality types and retirement

After identifying personality types, we included them in a latent change score model on change in well-being (table 7)
### Table 7. Baseline and change in well-being (personality types)

<table>
<thead>
<tr>
<th></th>
<th>Baseline Without Interactions (Model 1)</th>
<th>Baseline With Interactions (Model 2)</th>
<th>Change Without Interactions (Model 1)</th>
<th>Change With Interactions (Model 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intercept</strong></td>
<td>5.15 (0.84)***</td>
<td>5.17 (0.84)***</td>
<td>2.46 (0.72)***</td>
<td>2.46 (0.73)***</td>
</tr>
<tr>
<td>Well-Being T1</td>
<td>-</td>
<td>-</td>
<td>-0.29 (0.02)***</td>
<td>-0.29 (0.02)***</td>
</tr>
<tr>
<td>Retirement between waves</td>
<td>0.13 (0.08)</td>
<td>0.01 (0.13)</td>
<td>0.25 (0.06)***</td>
<td>0.32 (0.1)***</td>
</tr>
<tr>
<td>“Withdrawn”</td>
<td>-0.42 (0.05)***</td>
<td>-0.43 (0.05)***</td>
<td>-0.06 (0.04)</td>
<td>-0.07 (0.05)</td>
</tr>
<tr>
<td>“Free Spirits”</td>
<td>-0.22 (0.07)**</td>
<td>-0.24 (0.07)***</td>
<td>-0.1 (0.06)</td>
<td>-0.08 (0.06)</td>
</tr>
<tr>
<td>“Under-controllers”</td>
<td>-0.91 (0.09)***</td>
<td>-0.93 (0.1)***</td>
<td>0.08 (0.08)</td>
<td>0.001 (0.09)</td>
</tr>
<tr>
<td>Diseases</td>
<td>-0.12 (0.01)***</td>
<td>-0.12 (0.01)***</td>
<td>-0.04 (0.01)***</td>
<td>-0.04 (0.01)***</td>
</tr>
<tr>
<td>Education</td>
<td>-0.001 (0.01)</td>
<td>0.001 (0.01)</td>
<td>0.002 (0.01)</td>
<td>0.001 (0.01)</td>
</tr>
<tr>
<td>Gender (female)</td>
<td>-0.02 (0.05)</td>
<td>-0.02 (0.05)</td>
<td>0.06 (0.04)</td>
<td>0.05 (0.04)</td>
</tr>
<tr>
<td>Age</td>
<td>0.01 (0.01)</td>
<td>0.01 (0.01)</td>
<td>-0.02 (0.01)</td>
<td>-0.02 (0.01)</td>
</tr>
<tr>
<td>Job rank</td>
<td>-0.05 (0.03)</td>
<td>-0.05 (0.03)</td>
<td>-0.02 (0.03)</td>
<td>-0.02 (0.03)</td>
</tr>
</tbody>
</table>
We found that personality types differed in well-being at baseline: Compared to resilient, all other groups reported lower well-being. Personality type did not predict change in well-being between waves. The positive effect of retirement on change in well-being was replicated in this model as well.

When adding interaction effects in a second model, we found a large, significant negative interaction effect on change in well-being. This effect is illustrated in figure 4: While for other personality groups, retirement had a positive effect, retiring undercontrollers experienced larger losses in well-being than their working counterparts.
Figure 4. Retirement, personality type and change in well-being
Note: Baseline well-being and all other covariates are set to the mean values. This means that changes are not the general mean changes in the groups, but mean changes if all groups scored the same on baseline well-being and all covariates.

2.2.4.4 Personality traits and retirement

As a final step, we calculated latent change score models with personality traits instead of types to compare results of variable- and person-oriented models (table 8). In these models, we found that higher scores in neuroticism were related to lower well-being and losses in well-being across time, while higher extraversion was related to higher baseline in well-being and more positive changes over time. High scores in openness and agreeableness were related to higher baseline well-being.
<table>
<thead>
<tr>
<th></th>
<th>Baseline Without Interactions</th>
<th>Baseline With Interactions</th>
<th>Change Without Interactions</th>
<th>Change With Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intercept</strong></td>
<td>4.49 (0.81)**</td>
<td>4.29 (0.80)**</td>
<td>2.40 (0.72)**</td>
<td>2.45 (0.72)**</td>
</tr>
<tr>
<td><strong>Well-being T1</strong></td>
<td>-</td>
<td>-</td>
<td>-0.31 (0.02)**</td>
<td>-0.28 (0.02)**</td>
</tr>
<tr>
<td><strong>Retirement</strong></td>
<td>0.14 (0.08)</td>
<td>0.14 (0.08)</td>
<td>0.25 (0.06)**</td>
<td>0.23 (0.06)**</td>
</tr>
<tr>
<td><strong>Neuroticism</strong></td>
<td>-0.36 (0.02)*****</td>
<td>-0.37 (0.03)*****</td>
<td>-0.09 (0.02)*****</td>
<td>-0.08 (0.02)****</td>
</tr>
<tr>
<td><strong>Extraversion</strong></td>
<td>0.14 (0.02)*****</td>
<td>0.14 (0.02)*****</td>
<td>0.05 (0.02)*</td>
<td>0.06 (0.02)*</td>
</tr>
<tr>
<td><strong>Openness</strong></td>
<td>0.05 (0.02)*</td>
<td>0.04 (0.02)*</td>
<td>-0.04 (0.02)</td>
<td>-0.03 (0.02)</td>
</tr>
<tr>
<td><strong>Agreeableness</strong></td>
<td>0.04 (0.02)</td>
<td>0.05 (0.03)</td>
<td>0.004 (0.02)</td>
<td>-0.02 (0.02)</td>
</tr>
<tr>
<td><strong>Conscientiousness</strong></td>
<td>0.12 (0.02)*****</td>
<td>0.13 (0.02)*****</td>
<td>0.03 (0.02)</td>
<td>0.02 (0.02)</td>
</tr>
<tr>
<td><strong>Diseases</strong></td>
<td>-0.09 (0.01)*****</td>
<td>-0.09 (0.01)*****</td>
<td>-0.03 (0.01)*****</td>
<td>-0.03 (0.06)*****</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>0.002 (0.01)</td>
<td>0.002 (0.01)</td>
<td>0.005 (0.01)</td>
<td>0.004 (0.01)</td>
</tr>
<tr>
<td><strong>Gender (female)</strong></td>
<td>0.04 (0.05)</td>
<td>0.04 (0.05)</td>
<td>0.06 (0.04)</td>
<td>0.06 (0.04)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>0.01 (0.01)</td>
<td>0.01 (0.01)</td>
<td>-0.02 (0.01)</td>
<td>-0.02 (0.01)</td>
</tr>
<tr>
<td><strong>Job rank</strong></td>
<td>-0.03 (0.03)</td>
<td>-0.03 (0.03)</td>
<td>-0.02 (0.03)</td>
<td>-0.02 (0.03)</td>
</tr>
<tr>
<td><strong>Retirement x Neuroticism</strong></td>
<td>0.08 (0.08)</td>
<td></td>
<td>-0.05 (0.06)</td>
<td></td>
</tr>
<tr>
<td><strong>Retirement x Extraversion</strong></td>
<td>-0.05 (0.09)</td>
<td></td>
<td>-0.11 (0.07)</td>
<td></td>
</tr>
<tr>
<td><strong>Retirement x Openness</strong></td>
<td>0.04 (0.08)</td>
<td></td>
<td>-0.02 (0.07)</td>
<td></td>
</tr>
</tbody>
</table>
Retirement x Agreeableness  -0.05 (0.09)  0.18 (0.07)*

Retirement x Conscientiousness -0.1 (0.08)  0.1 (0.06)

Note.
N=2,654. *p<.05 **p<.01 ***p<.001
Fit Indices:
Model 1: CFI = .95, TLI = .94, RMSEA = 0.06, 95% CI[.52;.58], Chi²(130) = 1170.79, p < .001, SRMR = .02; R² = .277 for baseline well-being, R² = 0.152 for change in well-being.
Model 2: CFI = .95, TLI = .94, RMSEA = 0.05, 95% CI[.45;.50], Chi²(170) = 1197.63, p < .001, SRMR = .02; R² = .277 for baseline well-being, R² = 0.157 for change in well-being.

A positive interaction effect between agreeableness and retirement shows that the effect of retirement was more positive for people with high scores in agreeableness.
Chapter 3
Chapter 3
General discussion

3.1 The effect of retirement on well-being

In the background section, the importance of retirement for individual well-being was outlined, as well as general theoretical and practical aspects of research on retirement adjustment. Study I was a structured review of empirical findings. Below these two parts are connected and it is discussed how the findings offer evidence for or against current theories, and which research gaps can still be identified.

In early theoretical conceptualizations, retirement appeared as a critical, stressful life event (Barron, Strein, & Suchman, 1952; Ellison, 1968), which makes sense given the important role work plays throughout the life course for individual identity, status, and need satisfaction (Jahoda, 1981; Paul & Batinic, 2009). Nevertheless, most studies conducted during the last 27 years show relative stability in well-being across retirement. Compared to other life events as widowhood or child birth, well-being is rather stable across retirement (Luhmann et al., 2012). This is in line with the continuity theory (Atchley, 1971), which implies that retirement should be associated with only few adjustment problems. But recent studies show a more
heterogeneous picture of retirement adjustment. People differ in the way they react to retirement: While for some sub-groups, retirement is associated with stability or even gains in well-being, others experience losses (Wang, 2007; Pinquart & Schindler, 2007). Approaches that highlight the heterogeneity of transitions, such as life course theory (Kim & Moen, 2002) and resource perspective (Wang, 2007) seem to offer more appropriate guidelines for understanding well-being across the transition. The review shows that the context of retirement (e.g. reasons for retirement, age at retirement), pre-retirement life (e.g. work role attachment), as well as post-retirement behavior (e.g. bridge jobs) are important for understanding the transition.

Identified moderators of the effect of retirement can be divided in two groups: First, factors that are directly associated with losses or gains in resources over time can moderate the effect of the transition. For example, people who are forced to retire (Hershey & Henkens, 2014) or who had strong work attachment (Kubicek et al., 2011) are likely to experience stronger losses, and thus also to experience more negative effects of retirement. People who had been unemployed before retirement (Wetzel et al., 2015) or who were dissatisfied with their work (Wang, 2007) should benefit from retirement, because they lose their unfavored pre-retirement role, and empirical studies show a positive effect on well-being.

The second group of moderators consists of factors that ease the adjustment to retirement by providing important post-retirement resources.
These factors include for example a good health status (Wang, 2007), a post-retirement job (Wang, 2007), education (Wetzel et al., 2015), and a joint retirement (Szinovacz & Davey, 2004a).

To sum up the literature on retirement adjustment, it can be concluded that retirement is not a genuinely positive or negative event, but the effect depends on the individual pre-retirement resources, resource losses across the transition, and most likely the individual adjustment behavior. Also, moderators of the effect of retirement can be found on different levels (Wang et al., 2011).
3.2 Research gaps

Many important aspects regarding general trends and heterogeneity of the effect on change in well-being in retirement remain unclear.

First, there is little documented information on the way that people respond to retirement, how they use opportunities, outweigh losses, and how they find meaningful post-retirement roles activities. Adjustment styles are related to change in well-being across the transition (Kubicek et al., 2011), but the reviewed studies do not offer much evidence on the actual adjustment behavior people engage in. Bridge jobs (Wang, 2007) and physical activity (Dave et al., 2009) might help people during the transition. But the association between changes in lifestyle and goal structure on the one hand, and changes in well-being on the other hand remains unclear. Furthermore, it maybe assumed that depending on the individual losses, different post-retirement adaptation behavior might be appropriate. For example, the direction of the effect of bridge employment might depend on the underlying motivational and goal structure. Löckenhoff (2012) has addressed the potential role of life span psychological approaches to understand these behaviors, and future studies should use these approaches (e.g. the SOC model, Baltes, 1997) as a framework.

Furthermore, the temporal aspect of the adaptation to retirement has not been addressed in most studies. Unlike other life events (Anusic et al.,
the adaptation to retirement is rarely studied as a process over time with a phase of anticipation, short-term reaction and long-term adaptation. Pre-retirement anticipation has not been addressed in the studies reviewed. Furthermore, we know too little about general trends and individual differences in short- and long-term effects. Studies that have considered short- and long-term change have shown that short- and long-term consequences of retirement, as well as predictors of short- and long-term adjustment differ (Gall et al., 1997; Pinquart & Schindler, 2007; Wetzel et al., 2015). Study II in this thesis, as well as some other empirical studies (e.g. Wetzel et al., 2015) show support for a “honeymoon” period after retirement (Atchley, 1976). But this honeymoon might only be present for certain subgroups (Pinquart & Schindler, 2007; Wang, 2007). Moreover, subgroups of individuals who experience retirement as a relief can actually be those that experience long-term disadvantages (Pinquart & Schindler, 2007).

This leads to another important aspect that has rarely been addressed in the literature on retirement. Research on well-being after retirement, including this thesis, mostly focuses on the individual experiences of retirement, ignoring the resulting changes in the overall social distribution of well-being. We know little about the question if retirement changes the overall patterns of inequality in well-being and health. Retirement might change the social distribution of well-being in a way so that social groups with advantages before retirement might end up with even higher well-being
after retirement (cumulative advantage/disadvantage theorem, DiPrete & Eirich, 2006; Ross & Wu, 1996), or it might equal out earlier differences. The effects of retirement on social (in-)equality might be compared to a “lens” (König, Henning, Lindwall, & Johansson, in prep.); retirement can either work as a convex lens, decreasing existing differences, or a concave lens, increasing existing differences (Figure 5), or more like an empty glass without any effect.

![Figure 5. Retirement as a convex/converging (a) or concave/diverging (b) lens](image)


Wetzel et al. (2015) found a short-term “convex” effect in the way that people who were unemployed (and less satisfied) before retirement, showed particular increases in well-being across retirement. The long-term changes in well-being, however, were negative for people with low education, which is rather an example of a “concave” effect. Pinquart and Schindler (2007) found that a subgroup of people who were unhealthy and
often unemployed experienced more positive effects across the transition (convex lens effect) but a negative effect for this group later on (concave lens effect).

If we look at work-related factors, we find more positive effects for people who have rated their prior job environment lower (Wang, 2007). This might also be an example of a more convex lens, since people in dissatisfying jobs have presumably been less happy than those in satisfying jobs before retirement. Nevertheless, maybe these subgroups might experience more negative changes later on: Those with a better work environment probably acquired more resources over their life time, which might be crucial for maintaining lifestyle and well-being in the light of age-related changes in health (Wetzel & Huxhold, 2016).

The focus is not on the effect of retirement on social inequality. But it would be a great benefit for upcoming studies to take a closer look at if and how retirement changes the social distribution in well-being.

Finally, the role of psychological factors is largely missing in the reviewed studies, the only exceptions are studies on mastery (Kim & Moen, 2002), adjustment styles (Kubicek et al., 2011) and (lately) personality (Kesavayuth et al., 2016). This problem has been remarked in other reviews before (e.g. Shultz & Wang, 2011). We have tried to help filling this gap in study II.
3.3 The role of personality

In study II, we have tried to add to the literature by investigating the role of personality types for change in well-being across retirement. We have shown that a person-oriented approach to personality can help to understand the complex interactions among personality traits involved in the relationship between retirement and well-being.

We identified four sub-groups with distinct personality profiles. Two of them (resilients and undercontrollers) resemble types found in earlier studies (Specht et al., 2014). Resilients, who scored high on extraversion, openness, agreeableness and conscientiousness, reported the highest well-being at baseline. This fits to the previous literature on personality types (Steca et al., 2010).

Retirement had a positive main effect on change in well-being in our sample. But this positive effect did not hold for all subgroups – for undercontrollers, retirement had a negative effect on well-being: Retiring undercontrollers experienced stronger losses in well-being than those working. These findings offer support for the model of Reis and Pushkar Gold (1993). In this model, high scores in neuroticism are supposed to have a negative effect on well-being in retirement, while high scores in the other four main traits have positive effects on well-being. Undercontrollers report high scores in neuroticism and low scores in the other traits, which is the
most negative combination among the personality types, according to Reis and Pushkar Gold (1993). In variable-oriented models with personality traits instead of types, only agreeableness moderated the effect of retirement, in the way that high scores in agreeableness were related to a more positive change in well-being for retiring participants. One might argue that agreeableness might be the only trait responsible for the disadvantages of undercontrollers in the retirement process. But another group of retirees (the “withdrawn” group) scored below-average in agreeableness as well, and their retirement transition did not differ from the reference group in terms of well-being. Based on this observation, it may be argued that the personality profiles might explain the situation around retirement better than single traits. Therefore, the person-oriented approach offers a valuable perspective to the retirement transition.

These effects may be explained by differences in pre-retirement resources and post-retirement adjustment behavior (Reis & Pushkar Gold, 1993). Since the undercontrollers report high scores of neuroticism, they should be more likely to have a negative attitude towards retirement and a more negative self-view. Because of their high neuroticism and low conscientiousness, they should be less prepared and have weaker problem solving skills. Low agreeableness, as well as low extraversion, should make it harder to find friends in a post-retirement environment without the work related social network. Low extraversion and low openness should also
decrease their ability to find meaningful activities in retirement. For now, these possible pathways are only hypotheses. In future studies, it might be fruitful to see if the association between personality and change in well-being across retirement holds if pre-retirement resources, such as income, pre-retirement social network and attitudes towards retirement, are considered, and if personality also predicts differences in adjustment behavior that might influence post-retirement well-being.

We do not find the negative effect of conscientiousness as Kesavayuth et al. (2016). This might be the result of different methods, samples, or a country specific effect. We controlled for gender, instead of constructing separate models, but the results of the whole sample reported by Kesavayuth et al. (2016) are not in line with our results either: They reported a positive effect of neuroticism in addition to the negative effect of conscientiousness. These different effects might be a result of different measures of well-being and personality in the earlier study. Furthermore, although we controlled for education and health, our sample is relatively highly educated and healthy, which means that we might have included only a certain subgroup of the population with specific resources and experiences. Finally, as noted in the background section, retirement is associated with different challenges in different countries. It would be important to perform coordinated analyses on datasets from different countries, to test for commonalities and differences in the moderating role of personality.
In sum, we can conclude that personality plays an interesting role in retirement adjustment, and might help us understanding why some people experience more positive effects of retirement, while others experience losses in well-being. Pathways of the influence of personality are still to be investigated in future studies.
3.4 Strengths and limitations

The studies in this thesis have different weaknesses and limitations.

Study I is a structured review, but it does not include meta-analytic calculations, so we cannot make any conclusions of the size and significance of the effect of retirement on well-being. Our conclusions are based on our interpretation of the given studies. Furthermore, we did not conduct a systematic review in accordance with the PRISMA-rules (Moher et al., 2009). For example, we did not judge the reviewed studies for quality, and we did not provide a scheme on the number of articles selected or excluded due to different selection criteria. Finally, we mainly concentrated on the individual changes in well-being in the published article, and did not address the effects on social inequality.

On the other hand, this study sheds light on the specific effect of retirement on well-being while considering various moderators and the theoretical background. It provides an overview of the current knowledge on retirement adjustment, informs about risk factors and resources for the transition, and helps to generate new research questions.

Study II was one of the first studies on the role of personality in retirement adjustment. Therefore, the focus was on general associations as opposed to underlying mechanisms. More waves of data and advanced longitudinal methods could be used to shed light on potential pathways, and to investigate
if the effects of retirement and personality are short-term or long-term effects (Wetzel et al., 2015; Yap et al., 2012). Additionally, we restricted the analysis to the effect of personality on well-being in full-time retirement. This excludes different phenomena such as early retirement or partial retirement, and the effects of personality might be different for those transitions. Additionally, since we have only one wave of personality available we cannot investigate change in personality after retirement (Löckenhoff et al., 2009; Specht et al., 2011) or bi-directional associations between well-being and personality (Allemand & Martin, 2016; Soto, 2015). Finally, we used a relatively highly educated sample, so generalizations of our findings should be done with caution.

Nevertheless, study II adds to the literature as it is one of the first studies investigating the role of personality for retirement outcomes, and the first one to apply a person-oriented approach to personality in retirement research. It also includes a control group, making it possible to distinguish general effects of personality from retirement-specific. More in general, it also contributes to an increased understanding the role of psychological factors for retirement adjustment, which has been demanded in earlier reviews (van Solinge, 2012).

Both studies have filled research gaps and are intended to contribute to a better understanding of the heterogeneity in the adjustment to retirement.
3.5 Outlook

In this licentiate thesis, I have presented evidence for various pre-retirement factors that may explain change in well-being across retirement. As a next step, in following papers for the final dissertation, I will investigate post-retirement behavior and their role for positive development in retirement. I plan to connect pre-retirement conditions and resources, post-retirement adjustment behavior and short- and long-term well-being and health. Study I and study II have been related to the association of pre-retirement conditions and well-being after retirement. The following two or three studies should address the other associations (see figure 6).
I differentiate three steps in the further process:

First, I want to understand how psychological pre-retirement factors predict different post-retirement behaviors. More specifically, I want to investigate if pre-retirement work motivation predicts post-retirement work force participation (study III, Henning, Stenling, Taefvelin, & Lindwall., in prep.), and if the perceived time horizon predicts if people engage in new activities after retirement (study IV, Henning, Bjälkebring, Lindwall, & Johansson, in prep.).
As a next step, I aim to understand how this behavior is related to individual well-being and health. The aim is to understand how bridge employment relates to psychological need satisfaction after retirement (study III, Henning et al., in prep.), and how within-person changes in leisure activity across the transition correlate with changes in well-being and cognitive performance (study V).

Finally, I aim to investigate if the effect of a specific post-retirement behavior (working in retirement) differs for different subgroups, in particular, if the effect of partial retirement depends on the individual work motivation (study III, Henning et al., in prep.).

Different researchers have called for more psychological theories to be applied to retirement adjustment (Löckenhof, 2012; van Solinge, 2012). Consequently, I want to integrate theories from both work psychology and life span psychology. More specifically, I aim to investigate adaptation processes in the light of self-determination theory (SDT, Deci & Ryan, 2000; Gagné, & Deci, 2005) and socioemotional selectivity theory (Carstensen, 2006; Carstensen, Isaacowitz, & Charles, 1999; Lang & Carstensen, 2002).

The basic assumption behind SDT is that people have different reasons for their behavior, and dependent on the reasons for the behavior, it will lead to different consequences (Deci & Ryan, 2000). This approach has also been related to work motivation (Gagné & Deci, 2005; Gagné, 2014). In the context of SDT, motivation is broadly separated into amotivation, controlled
motivation, and autonomous motivation (Deci & Ryan, 2000). It has been argued that this distinction is too simplified, so more recent studies use a stage model with an increasing degree of autonomy (Deci & Ryan, 2008; Gagné & Deci, 2005). In addition to financial reasons (Lux & Scherger, 2017), different work motivation styles might predict if a person engages in post-retirement employment, and in its effectivity. Working to some extent in retirement might be an option for more autonomously motivated retirees to “get the best of both worlds”: They might benefit from the content of the work, the social context and the extra income from the job, while being able to gain more leisure time and autonomy through their retirement pension. On the other hand, amotivated or extrinsically motivated retirees might be less likely to work after retirement, and if they do, it might have more negative consequences for psychological health. In study III, we test this with data of the HEARTS study.

Socioemotional selectivity theory, on the other hand, is aimed at explaining differential preferences and behavior of older as opposed to younger adults (Carstensen, 2006). Age differences are assumed to be the consequence of the perceived length of remaining life time, and this feeling should have implications for people’s goals and actions (Carstensen, 2006). Social emotional selectivity theory provides an explanation of age-related changes in behavior: The theory proposes that when experiencing a sense of a shortened remaining life time, people withdraw from goals concentrated on
new knowledge and new experiences, and focus on goals related to emotion regulation (Carstensen et al., 1999). This assumption has important implications, supported by numerous studies: The individual future time perspective and the associated goals relate to specific actions and characteristics, such as social network structure (Fung, Carstensen, & Lang, 2001), coping behavior (Carstensen, Fung, & Charles, 2003), or forgiving (Cheng, & Yim, 2008). These effects can be positive for the individual, but can have negative implications, for example for health behavior, as well (Löckenhoff, & Carstensen, 2004). The perceived time horizon shrinks as we age, however, it is also possible to experimentally shorten or prolong it. By experimentally manipulating the perceived time horizon researchers have shown a direct causal influence of future time perspective on motivation (Fredrickson & Carstensen, 1990). We are interested to see if retirement induces changes in future time perspective, and if pre-retirement future time perspective predicts how people react to retirement: Will they engage in new activities and find new contacts, or will they focus on given pre-retirement social networks and activities? Study IV should test this.

The analyses and manuscripts for study III and IV are already in progress. Study V will be conducted when three waves of data of the HEARTS study are available. In study V we plan to investigate changes in different domains of leisure activity, using a person-oriented approach, and to relate these changes to changes in well-being and cognitive performance, as continuity
theory (Atchley, 1971) and role theory (Maizel Chambré, 1984) highlight the role of post-retirement lifestyle for adaptation to retirement, and leisure time cognitive stimulation is supposed to be important for cognitive health after retirement (Andel et al., 2016).

In this thesis, I have started to disentangle the complicated associations of retirement and well-being in old age. In the final thesis, I aim to present a more detailed picture of post-retirement adaptation and its consequences for individual health and well-being.
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Manuscripts
Study I

Short Review

Continuity in Well-Being in the Transition to Retirement

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Abstract. We review recent longitudinal studies on change and continuity in well-being during the retirement transition. Our conclusion is that most retirees maintain their level of well-being over retirement. Some studies, however, provide evidence for a substantial heterogeneity and dynamic effects. A smaller subgroup experiences losses in resources and challenges which compromise their well-being. Various adaptive actions seem to help to cope with losses, but we still lack more detailed information about the role and effects of these coping strategies. Future longitudinal studies need to address the role of and interplay among these adaptive behaviors over the retirement transition to improve our understanding of continuity and change in postretirement well-being.

Keywords: retirement transition, retirement adjustment, well-being

Introduction

The present review provides an overview of the effects of retirement on well-being, integrating psychological theories proposed to account for continuity and observed changes. Initially we contextualize well-being in the transition to retirement to the theme of stabilization in old age. We then briefly present the theoretical assumptions for expectations of change and continuity in well-being after retirement. We also address potential moderators and mediators of change in well-being. Finally, we report the empirical results obtained from reviewed longitudinal studies in terms of main effects followed by moderators and mediators identified in the reviewed studies.

Retirement Transition and the Challenge of Stability and Change in Well-Being

This special issue deals with health stabilization in older adults, focusing on development in later life. Although older adults nowadays are typically rather healthy when they enter retirement, we know that to understand old age developments, we need to take the entire lifespan into account: Lifespan research highlights the importance of life time experiences, lifestyle and health behavior for late-life physical, mental and cognitive health (Baltes, Staudinger, & Lindenberger, 1999; Deary, Whalley, Batty, & Starr, 2006). There are two main reasons why we consider the retirement transition, representing a frontier between preretirement midlife and a new life phase (Ekerdt, 2010), to be a significant event in the context of overall health stabilization and subsequent late-life developments.

First, entering retirement means losing certain work-related roles and resources. Retirement “pushes” people into a new life phase. For many of the “young olds” it is the first time they have to deal with typical aging-related challenges, e.g., specific social roles and expectations and a social network that perhaps needs to be maintained more proactively than in worklife. Understanding how people cope with these challenges when facing them for the first time might help us to understand how people can maintain well-being and health in older ages as well.

Second, retirement might be directly associated with later developments. We know that once people have acquired certain routines, they are unlikely to change. Humans show a preference for continuity, especially in older age (Atchley, 1989). Some events, like retirement, change the availability of resources (Wang, 2007), which might force people to change and to adapt to the new circumstances that may contribute to a change in lifestyle (van Solinge & Henkens, 2008). Adaptation problems because of specific losses in resources might lead to stress and an unhealthier and unsatisfying postretirement lifestyle (Bacharach, Bamberger, Biron & Horowitz-Rosen, 2008). Empirical results show that the way people react to the retirement transition not only produces short-term effects. It is also associated with later well-being and depression (Dingemans & Henkens, 2015; Pinquart & Schindler, 2007). We cannot, however, be sure that the retirement transition is the only causal factor in such a trajectory. Nevertheless, the adaptation in the retirement phase might be a first indicator of how people will develop later on. Interventions might also be specifically tailored for those who present difficulties in this life phase.
We investigate well-being as it is a commonly used indicator of adaptation after life events (Lucas, 2007). Another systematic review looked at the effect of retirement on health before (van der Heide, van Rijn, Robroek, Burdorf, & Proper, 2011), but we know that well-being has some unique predictive value: It has been shown to be an important predictor of later health developments and mortality (Diener & Chan, 2011), particularly in people older than 65 (Wiest, Schütz, Webster, & Wurm, 2011).

Changes in Well-Being after Retirement – the Theoretical Background

Change or Continuity

Over the last decades research has often focused on the effects of retirement on well-being. Retirement was long seen as a “crisis” to the older worker. In the context of the old role theory, retirement was typically viewed as a time of loss – the loss of the work role and of other resources as well. Role theory highlights the importance of the work role for self-worth and well-being (Taylor-Carter & Cook, 1995). In this context, occupation is supposed to be crucial for both social status and identity, so losing the work role also means losing a central life role (Ballweg, 1967; Ellison, 1968; George & Maddox, 1977). Retiring should thus be associated with losses in well-being.

In contrast, the continuity theory by Atchley (1971) proposes that work is not as crucial for our self-concept and identity as role theory implies. We tend to form our identity out of multiple sources. Even though job-related roles and activities are lost, other sources to build one’s identity on remain, such as family and non-work-related social networks. The continuity theory (Atchley, 1971, 1989) assumes that people aspire to maintain continuity over the lifespan. Successful or normative aging means to maintain one’s inner (e.g., preferences, skills) and external (e.g., activities) characteristics (Atchley, 1989). In the adaptation to retirement, retirees continue to view themselves as firefighters or lawyers (or whatever), and they try to save the important aspects of their former work into their postretirement life (Atchley, 1971). The level of well-being is maintained if certain important activities of the work life are transferred into postretirement activities, and the job-related skills can be used successfully in future activities (Atchley, 1971). According to continuity theory, retirement should not lead to major changes in people’s well-being.

Later studies adapting the lifespan or life-course perspective have highlighted the importance of the individual context of the transition, as well as the interplay of different life spheres (e.g., Kim & Moen, 2002). Not only the status of a person before the transition, but also accumulated experiences over the entire lifespan and earlier transitions might influence how the retirement transition is perceived (Damman, Henkens, & Kalmijn, 2015).

Building on these different approaches, Wang and colleagues (Wang, 2007; Wang, Henkens, & van Solinge, 2011) proposed a general framework to study changes in well-being after the retirement transition, the so-called dynamic resource perspective on retirement. This framework is not directly based on one of the theories mentioned above; it rather aims for integration. A basic assumption of the model is that certain psychosocial and environmental factors influence the availability of specific resources crucial for well-being. Changes in these circumstances and thus in the availability of resources during the retirement process accompany changes in well-being (Wang, 2007). Resources include physical, motivational, or financial resources needed to satisfy important needs. If resources are lost after retirement, the model assumes a decrease in well-being (Wang, 2007). The retirement adjustment process is seen as dynamic; due to changes in the availability of resources, there is always an option for changes in well-being (Wang et al., 2011).

The resource approach does not provide an explicit theoretical account for the specific losses or gains that might accompany retirement. It rather acts as a framework to test hypotheses of interindividual differences in intraindividual change over the retirement transition. By offering a new perspective on retirement, the approach helps to underline the importance of individual resources and resource losses for retirement outcomes, and helps to develop new research questions.

Individual Differences: Moderators of Change or Continuity

Lifespan and resource perspective encourage us to see retirement as an individual event with individual consequences. Possible predictors of change or continuity after retirement include:

Country

Various retirement regulations operate across countries that may influence retirement behavior (Börsch-Supan, Brugiavini, & Croda, 2009). They might also be associated with different views on age and aging, and different possibilities for retirees to engage in societal life and satisfy their needs outside of the workforce. Country specific characteristics are likely to produce cross-national differences, which have been reported cross-sectionally (Fouquereau, Fernandez, Fonseca, Paul, & Uotinen, 2005).
Time of Assessment

Studies on adaptation to life events show that one has to distinguish between a short term effect and later developments (e.g., Lucas, 2007). We know that people are likely to continuously adapt to changes. Potential positive or negative effects might already have disappeared in cases when we measure after an extended time period after the retirement event. After a first phase of negative experiences and losses, finding new roles and activities might help to adapt. On the other hand, Atchley (1976) proposed that the first period of retirement might be associated with a so-called honeymoon, i.e., an increase in wellbeing, due to the individual’s experience of new freedom, followed by disenchantment, when people experience everyday life in retirement and face new problems. Thereafter follows a reorientation with a more realistic view on life in retirement as well as concrete problems than people who in fact preferred to retire. Planning for retirement should facilitate the transition by providing a more realistic view on life in retirement as well as concrete problems than people who in fact preferred to retire.

Work Life and Work Role

Role theory proposes challenges and problems following the exit from work life (George & Maddox, 1967). Retirement is likely to be perceived as negative when certain worklife conditions satisfied and contributed to valued and important individual needs. The more important these resources are the more likely retirement is followed by loss in wellbeing. The closer people are attached to their workplace, the more important the role of a worker and the less desirable leaving the job should be (Adams, Prescher, Beehr, & Lepisto, 2002). If a job does not offer many opportunities, or if the individual rather receives qualities in the private life sphere, retiring should not be perceived as comparably problematic. If some aspects of the worklife even affected one’s preretirement well-being negatively, losing those can even be associated with gains in retirement.

Context of the Transition

The lifespan perspective highlights the importance of context, thus also the context of the retirement transition. Retirement does not mean the same for everyone. Research shows that people retire of different reasons (Shultz, Morton, & Weckerle, 1998). It is likely that people who are forced to retire but would have liked to continue working experience more adjustment problems than people who in fact preferred to retire.

Psychosocial Characteristics

The capacity to adapt to changes is partly dependent on specific and available personal resources. Reis and Pushkar Gold (1993) assume that personality might play a role. People scoring higher on neuroticism are expected to experience more negative emotions and to show more maladaptive behavior in retirement. Extraversion and openness are on the contrary assumed to be associated with better adjustment because extraversion might help to establish and maintain social networks and openness might increase the opportunity to engage in new satisfying activities. Furthermore, social support and a stable relationship have been proposed to work as a buffer helping us to adapt to the effects of life stressors (Cohen & Wills, 1985).

Perceived control over one’s life or mastery seems to be strongly connected to perceived retirement adjustment (van Solinge & Henkens, 2005; 2008). The assumption that the feeling of control over one’s life is essential for wellbeing is widespread (see e.g., Ryan & Deci, 2006) and viewed as a crucial component for successful aging (Rowe & Kahn, 1997). To perceive control over one’s life presumably helps to cope with stressors on the cognitive, emotional and behavioral level (Heckhausen & Schulz, 1995). Perceived control should enable retirees to approach the new life phase choosing appropriate strategies to deal with challenges and new roles.

Adaptive Strategies

As noted, the effect of retirement may partly depend on the unique individual losses associated with retirement. Many scholars seem to neglect the fact that retirees are not to be viewed as “inactive victims of retirement.” A main research topic in psychology focuses on our ability as humans to adapt to changes in the environment and to achieve control over one’s life. Van Solinge and Henkens (2008) argue that the adjustment to retirement includes coping with the loss of the workrole and developing a satisfactory postretirement lifestyle. As people already anticipate retirement long before the event and are often correct in their assumptions (Ekerdt, Vinick, & Bossé, 1989), processes of adaptation may be initiated long before the actual retirement event (Damman, Henkens, & Kalmin, 2013) which makes it more difficult to observe adaptive processes in a simple pre/post design: Expectations and plans for retirement are likely to influence postretirement outcomes. Anxiety and expectations might form the way people perceive and react to the adaptive challenges imposed by retirement. Planning for retirement should facilitate the transition by providing a more realistic view on life in retirement as well as control over the situation (Taylor-Carter, Cook, & Weinberg, 1997).

One way to react to the postretirement challenges is to prolong
the workforce participation, i.e., engaging in so-called bridge jobs. This might be helpful to prevent negative consequences of retiring, such as losses of social or financial resources (Kim & Feldman, 2000). On the other hand, bridge jobs only delay the retirement transition. Another opportunity might be voluntary work, which could serve as an opportunity to find meaning and identity in a world without paid work (Van den Bogaard, Henkens, & Kalmijn, 2014). Some studies show that the retirement event increases the likelihood to start volunteering (Mutchler, Burr, & Caro, 2003; Van den Bogaard et al., 2014). Nevertheless, other factors such as socioeconomic status (Chambre, 1984) and previous experience with volunteering over the lifespan (Mutchler et al., 2003) are far more predictive of volunteering than retirement status. Thus, volunteering does not seem to be a major strategy to adapt to retirement in the general population.

Another possible way to adapt might be to increase one’s engagement in leisure activities (Atchley, 1971). We know that it becomes less common to initiate new activities at an older age. People rather continue with activities they are acquainted with over their lifespan until worsening health status and losses in resources may force them to reduce activity (e.g., Strain, Grabusnic, Searle, & Dunn, 2002). But retirement possibly facilitates an increased involvement in favorable leisure activities. There is some support for this assumption (Long, 1987; Iwasaki & Smale, 1998), but other studies find stability (Agahi, Ahacic, & Parker, 2006; Bossé & Erikst, 1981; Seitsamo, 2007) or even decreases after retirement (Nimrod, Janke, & Kleiber, 2009). However, active restructuring of one’s life after retirement, resulting in increases in leisure activity or volunteering, might be associated with increases in well-being after retirement, or might at least be needed to maintain stability.

**Losses and Gains in Retirement – Mediators of Change or Continuity**

While the moderators above make it more or less likely to experience a change in well-being after retirement, mediators constitute possible mechanisms of the effect of retirement on well-being. The resource perspective proposes that retirement changes well-being through changes in the availability of resources. Wang (2007) mentions physical, cognitive, motivational, financial, and social resources. Retirement should thus be associated with increases in well-being if people gain new resources by retirement, while people should experience a decline in well-being when resources decrease.

In sum, theories of retirement imply heterogeneous consequences of retirement, depending on individual resources and adaptive behavior. Our review below shows identified general patterns as well as variability of change in well-being after retirement and how different outcomes can be predicted.

**Method**

A literature review was conducted, using PsychInfo, Pubmed, and Google Scholar. Keywords for the search were retirement transition, reasons for retirement, retirement adjustment, as well as combinations of retirement with happiness, life satisfaction, stress, depression, and well-being. The following inclusion and exclusion criteria were applied:

1. Only longitudinal studies of change over the retirement transition were selected to avoid the well-known shortcomings accompanying cross-sectional designs.
2. Studies included had to include at least two waves of measurement on a specific well-being measure. We included only studies from 1990 and later in order to examine current developments.
3. We did not include studies that mixed retirement with job loss in older age. Even though definitions of retirement differ in the included studies, all of them included to some degree a change of self-reported work status from nonreired to retired.
4. The review is deliberately based on broad inclusion criteria of well-being outcomes. Studies of the retirement transition have typically used various outcome measures related to well-being, including specific items and scales of life satisfaction, quality of life, negative and positive affect, distress, and happiness. We also included studies focusing on depressive symptoms, if treated as a continuous scale and not as a diagnostic entity. We excluded studies solely based on other diagnoses of mental health. Furthermore, we excluded studies using measures of specific emotions like anxiety and anger, along the same line as suggested by Luhmann, Hofmann, Eid and Lucas (2012) in their meta-analysis on the effects of life events.

In total, we identified 32 studies meeting our inclusion criteria, i.e., longitudinal studies published later than 1990 and assessing well-being systematically before and after retirement.

**Findings**

A detailed overview of studies included in the review is shown in Table 1. Three typical methodological approaches were found: Some authors used one group pre/post comparisons, observing change from prereirement to postretirement. Others compared the change in well-being between a group of people retiring and a group continuing working. A third group of authors used regression techniques or structural equation modeling and included changes in occupational status in their models.

Studies differed also in the time between assessments. In the table we list the time between waves for big scale longitudinal
<table>
<thead>
<tr>
<th>Authors</th>
<th>Data base (survey or project)</th>
<th>N</th>
<th>Number of assessments</th>
<th>Time between assessments</th>
<th>Design</th>
<th>Outcome</th>
<th>Measure</th>
<th>Difference between preretirement and postretirement well-being</th>
<th>Significant moderators/mediators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abolhasani &amp; Alesie, 2013</td>
<td>German Socio-economic Panel</td>
<td>10,275</td>
<td>15</td>
<td>Annually</td>
<td>LM</td>
<td>Life satisfaction</td>
<td>Single item</td>
<td>0</td>
<td>Control over retirement</td>
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<td>Calvo et al., 2009</td>
<td>Health and Retirement Study</td>
<td>2,389</td>
<td>7</td>
<td>Biennially</td>
<td>LM</td>
<td>Happiness</td>
<td>Items from CES-D</td>
<td>0/–</td>
<td>Age at retirement</td>
</tr>
<tr>
<td>Calvo et al., 2013</td>
<td>Health and Retirement Study</td>
<td>6,624</td>
<td>12</td>
<td>Biennially</td>
<td>LM</td>
<td>Depression</td>
<td>CES-D</td>
<td>+/–</td>
<td>Control over retirement, Perceived control, retirement timing, Education, Health</td>
</tr>
<tr>
<td>Calvo &amp; Sarkisian, 2014</td>
<td>Health and Retirement Study</td>
<td>Sample 1: 5,995, Sample 2: 4,111</td>
<td>10</td>
<td>Biennially</td>
<td>PP</td>
<td>Depression</td>
<td>CES-D</td>
<td>–</td>
<td>Control over retirement, Perceived control, retirement timing, Education, Health</td>
</tr>
<tr>
<td>Clark &amp; Fawaz, 2009</td>
<td>Survey of Health, Ageing and Retirement in Europe*</td>
<td>722</td>
<td>2</td>
<td>1–3 years between measurements</td>
<td>PP</td>
<td>Depression</td>
<td>EURO-D</td>
<td>0/+/–</td>
<td>Education, country, work hours, type of occupation</td>
</tr>
<tr>
<td>Dave et al., 2008</td>
<td>Health and Retirement Study</td>
<td>77,194</td>
<td>7</td>
<td>Biennially</td>
<td>LM</td>
<td>Depression</td>
<td>CES-D</td>
<td>–</td>
<td>Social support</td>
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<tr>
<td>Dingemans &amp; Henkens, 2015</td>
<td>Work and Retirement Panel</td>
<td>1,189</td>
<td>3</td>
<td>5 years between measurements</td>
<td>LM</td>
<td>Life satisfaction</td>
<td>Items from the satisfaction with life scale</td>
<td>0+/–</td>
<td>Voluntariness, bridge job</td>
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<tr>
<td>Gall &amp; Evans, 2000</td>
<td>Retirement Research Study</td>
<td>109</td>
<td>3</td>
<td>2–4 months preretirement, 6–7 years post-retirement</td>
<td>PP</td>
<td>Depression</td>
<td>SCL-90</td>
<td>0</td>
<td></td>
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<tr>
<td>Gall et al., 1997</td>
<td>Retirement Research Study</td>
<td>117</td>
<td>3</td>
<td>2–4 months pre, 1 year post, 6–7 years post</td>
<td>PP</td>
<td>Life satisfaction</td>
<td>Single item SCL-90</td>
<td>0 + (short term) – (long term)</td>
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<td>Gayman et al., 2013</td>
<td>Health and Retirement Study</td>
<td>3,264</td>
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<td>LM</td>
<td>Depression</td>
<td>CES-D</td>
<td>0/+</td>
<td>Ethnicity</td>
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<tr>
<td>Hershey &amp; Henkens, 2014</td>
<td>Work and Retirement Panel</td>
<td>1,388</td>
<td>2</td>
<td>5 years between measurements</td>
<td>LM</td>
<td>Life satisfaction</td>
<td>Satisfaction with life scale (short form)</td>
<td>+/–</td>
<td>Voluntariness, reasons for retirement</td>
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<tr>
<td>Heybroek et al., 2015</td>
<td>Household, Income and Labor Dynamics in Australia survey</td>
<td>724</td>
<td>11</td>
<td>Annually</td>
<td>LM</td>
<td>Life satisfaction</td>
<td>Single item</td>
<td>0/+–</td>
<td>Sex, education, health, relationship, age at retirement, social support</td>
</tr>
<tr>
<td>Iwasaki &amp; Smale, 1998</td>
<td>Canada Fitness Survey/Campbell’s Survey on Well-Being in Canada (follow-up)</td>
<td>2,428</td>
<td>2</td>
<td>7 years between measurements</td>
<td>LM</td>
<td>Positive and negative affect</td>
<td>Bradburn Affect Balance Scale</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Authors</th>
<th>Data base (survey or project)</th>
<th>Number of assessments</th>
<th>Time between assessments</th>
<th>Design</th>
<th>Outcome</th>
<th>Measure</th>
<th>Difference between pre-retirement and postretirement well-being</th>
<th>Significant moderators/mediators</th>
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<tbody>
<tr>
<td>Karpas et al., 2013</td>
<td>Authors Data base (survey or project)</td>
<td>257</td>
<td>≤ 6 months pre-retirement; 7 years post-retirement</td>
<td>PP</td>
<td>Depression</td>
<td>CES-D</td>
<td>?</td>
<td>Income decline, moderated by attachment avoidance</td>
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<tr>
<td>Kim &amp; Moen, 2002</td>
<td>Cornell Retirement and Well-Being Study</td>
<td>458</td>
<td>2 years between measurements</td>
<td>CG</td>
<td>Morale</td>
<td>Philadelphia Geriatric Center Morale scale</td>
<td>0</td>
<td>Well-being pre-retirement; changes in perceived control, subjective health, income adequacy</td>
</tr>
<tr>
<td>Kubicek et al., 2011</td>
<td>Wisconsin Longitudinal Study</td>
<td>1,609 (Depression), 1,728 (positive psychological functioning)</td>
<td>11 years between measurements</td>
<td>PP</td>
<td>Depression</td>
<td>CES-D</td>
<td>+</td>
<td>Gender, Health, Tenacity in goal pursuit, Flexibility in goal adjustment, Financial resources, Work importance and work conditions</td>
</tr>
<tr>
<td>Latif, 2011</td>
<td>Canadian National Population Health Survey</td>
<td>22,040</td>
<td>Biennially</td>
<td>LM</td>
<td>Happiness</td>
<td>Single item</td>
<td>0/+</td>
<td>Age at retirement</td>
</tr>
<tr>
<td>Mayring, 2000</td>
<td>Übergänge in den Ruhestand [Retirement transitions]</td>
<td>329</td>
<td>6 months pre-retirement, 6 months post-retirement</td>
<td>PP</td>
<td>Life Satisfaction, Happiness</td>
<td>Single item</td>
<td>0</td>
<td>Sex, socioeconomic status, social network</td>
</tr>
<tr>
<td>Midanik et al., 1995</td>
<td>Kaiser Permanente Retirement Study</td>
<td>595</td>
<td>2 years between measurements</td>
<td>CG</td>
<td>Depression</td>
<td>CES-D</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Mojen-Azzi et al., 2007</td>
<td>Swiss Household Panel</td>
<td>523</td>
<td>Annually</td>
<td>CG</td>
<td>Depression</td>
<td>Single item</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Nuttman-Shwartz, 2004</td>
<td></td>
<td>56</td>
<td>6 months pre-retirement, 12 months post-retirement</td>
<td>PP</td>
<td>Well-being</td>
<td>Mental Health Inventory</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Pinquart &amp; Schindler, 2007</td>
<td>German Socioeconomic Panel</td>
<td>1,456</td>
<td>Annually</td>
<td>LM</td>
<td>Life Satisfaction</td>
<td>Single item</td>
<td>Short term: +/-0, Long term: –</td>
<td>Sex, age at retirement, health, unemployed before retirement, SES, marital status</td>
</tr>
<tr>
<td>Reitzes et al., 1996</td>
<td>Carolina Health and Transitions Study</td>
<td>826</td>
<td>2 years between measurements</td>
<td>CG</td>
<td>Depression</td>
<td>CES-D</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Authors</td>
<td>Data base (survey or project)</td>
<td>Number of assessments</td>
<td>Time between assessments</td>
<td>Design</td>
<td>Outcome</td>
<td>Measure</td>
<td>Difference between pre-retirement and postretirement</td>
<td>Well-being</td>
</tr>
<tr>
<td>----------------------------------------------</td>
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<td>-----------------------------------------------------</td>
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</tr>
<tr>
<td>Rhee et al., 2015</td>
<td>Health and Retirement Study</td>
<td>1,195</td>
<td>Biennially</td>
<td>LM</td>
<td>Depression</td>
<td>CES-D</td>
<td>+/−</td>
<td>Involuntary retirement</td>
</tr>
<tr>
<td>Seitsamo, 2007</td>
<td></td>
<td>3,815</td>
<td>4, 7, and 5 years between measurements</td>
<td>LM</td>
<td>Positive and negative affect</td>
<td>Occupational Stress Questionnaire</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Szinovasz &amp; Davey, 2004a</td>
<td>Health and Retirement Study</td>
<td>2,695</td>
<td>Biennially</td>
<td>LM</td>
<td>Depression</td>
<td>CES-D</td>
<td>+/−/0</td>
<td>Partners retirement status, sex, time of assessment</td>
</tr>
<tr>
<td>Szinovasz &amp; Davey, 2004b</td>
<td>Health and Retirement Study</td>
<td>2,649</td>
<td>Biennially</td>
<td>LM</td>
<td>Depression</td>
<td>CES-D</td>
<td>0/−</td>
<td>Involuntary retirement, early retirement, spousal disability, sex</td>
</tr>
<tr>
<td>Szinovasz &amp; Davey, 2006</td>
<td>Health and Retirement Study</td>
<td>2,681</td>
<td>Biennially</td>
<td>LM</td>
<td>Depression</td>
<td>CES-D</td>
<td>0</td>
<td>Grandchild care</td>
</tr>
<tr>
<td>De Vaus et al., 2007</td>
<td>Healthy Retirement Project</td>
<td>385</td>
<td>7 days pre-retirement, 12 months post-retirement, 24 months post-retirement, 36 months post-retirement</td>
<td>PP</td>
<td>Life satisfaction</td>
<td>Scale by Campbell et al., 1976</td>
<td>?</td>
<td>Control over retirement</td>
</tr>
<tr>
<td>Wang, 2007</td>
<td>Health and Retirement Study</td>
<td>N1 = 994, N2 = 1,066</td>
<td>Biennially</td>
<td>LM</td>
<td>Depression</td>
<td>CES-D</td>
<td>+/−/0</td>
<td>Bridge job, retirement planning, marital status, sex, spouse work status, physical job demands, work stress, job satisfaction, health decline, income, marriage quality, off-time retirement</td>
</tr>
<tr>
<td>Wetzel et al., 2015</td>
<td>German Socio-economic Panel</td>
<td>3,361</td>
<td>Annually</td>
<td>LM</td>
<td>Life Satisfaction</td>
<td>Single item</td>
<td>Short term: +, Long term: +</td>
<td>Pre-retirement work status, education</td>
</tr>
<tr>
<td>Yeung, 2013</td>
<td></td>
<td>90</td>
<td>6 months pre-retirement, 6 months post-retirement</td>
<td>PP</td>
<td>Psychological Well-being</td>
<td>Ryff Scales of Psychological Well-Being</td>
<td>0</td>
<td>Planning for retirement</td>
</tr>
</tbody>
</table>

Note. CG = control group, PP = pre/post comparison, LM = longitudinal modeling, − = worse WB after retirement, 0 = little or no change, + = better WB after retirement, ? = authors did not report a main effect +/−/0; +/-0, +/- or −/0 = Different effects for different subgroups. * data from the British Household Panel Survey was used in this study as well, but not included in this review because the measure did not fit our criteria.
surveys. For pre/post comparisons or differences between retirees and nonretirees, we report measurement inter-occasion time and if provided also the time span between measurements and the retirement event. In studies using longitudinal modeling techniques (LM), we report the changes that are related to the retirement event in the respective paper. If an article included changes between different time phases, we report only the comparisons between preretirement and postretirement well-being.

For changes in well-being we always report the direction of effects as "+" if well-being increased and as "–" if it decreased. A decline in depressive symptoms is thus denoted as "+".

**Longitudinal Continuity or Change in Well-Being after Retirement**

Interestingly, longitudinal studies typically show that retirement does not seem to affect well-being negatively. Only two studies report a negative main effect of retirement (Calvo & Sarkisian, 2014; Dave, Rashad, & Spasojevic, 2008). Most studies rather find continuity (e.g., Iwasaki & Smale, 1998; Kim & Moen, 2002; Mayring, 2000; Midanik, Soghikian, Ransom, & Tekawa, 1995; Nuttman-Shwartz, 2004; Szinovasz & Davey, 2006) or even a positive impact of retirement under normal circumstances (Latif, 2011; Mojon-Azzi, Souza-Poza, & Widmer, 2007; Reitzes, Mutran, & Fernandez, 1996; Wetzels, Huxhold, & Tesch-Römer, 2015). In a meta-analysis on adaptation to life events, Luhmann and colleagues (2012, p. 609) call retirement “a typical example of a ‘neutral’ event that comes with costs and benefits,” which means that the negative effects are balanced with positive effects and vice versa.

**Variability in the Reaction to Retirement**

Older studies have frequently neglected individual differences in the transition to retirement, or only investigated certain predictors. Instead of treating retirees as a homogeneous group, recent studies apply latent growth mixture modeling to identify subgroups of retirees with regard to changes in well-being. Wang (2007) used a US sample and a reversed-coded depression score as the dependent variable, while Pinquart and Schindler (2007) used a German sample and investigated changes in life satisfaction. Both identified three subgroups: The largest group showed stability during and after the transition event, having enough resources to deal with retirement-related changes (Wang, 2007). Pinquart and Schindler (2007) even found a small temporary increase around the event in this group. A smaller subgroup, unable to cope because of insufficient resources, showed losses in well-being after retiring but later recovered. A last subgroup seemed to benefit from retirement, at least temporarily. Wang (2007) calls this pattern “recovery,” as members of this subgroup seemed to have felt uncomfortable in their prior jobs (Wang, 2007) or had been unemployed and of bad health, and showed the lowest level of baseline satisfaction (Pinquart & Schindler, 2007). Nevertheless, in the long run, Pinquart and Schindler (2007) found this group experienced the most pronounced decline in well-being of all subgroups in the years following the retirement event. With a similar study design, Heybroek, Haynes, and Baxter (2015) investigated change in life satisfaction before and after retirement in an Australian sample. They found the same three groups as the other authors, but also a fourth group with high preretirement levels of well-being, whose well-being decreased significantly after retirement.

These results show that it is wise to consider the heterogeneity of the effects of retirement. Predictors and correlates of change in well-being after retirement are described further below.

**Moderators**

**Type of Study**

As noted above, studies differ in respect to their method. Nevertheless, we cannot find a systematic association between direction of effect and study type in the studies reviewed.

**Country of Origin**

Even though studies were conducted in different countries, we could not identify any systematic differences between countries.

**Time of Assessment**

In the reviewed studies, we find no clear difference between short-term and long-term effects.

**Facets of Well-Being**

Most studies assessed change in depression. Notably, there was more change in depression than in more cognitive-evaluative measures of well-being as life satisfaction, which often remained stable over the transition (Abolhassani & Allesie, 2013; Dingemans & Henkens, 2015; Gall, Evans, & Howard, 1997; Mayring, 2000). These results support the idea of life satisfaction as a stable trait; nevertheless, others found life events to have a stronger effect on cognitive than on affective facets well-being (Luhmann et al., 2012). Studies analyzing stress showed lower levels of stress after retirement (Gall et al., 1997; Midanik et al., 1995; Nuttman-Shwartz, 2004).
Socioeconomic Status and Education

Pinquart and Schindler (2007) found that lower socioeconomic status predicted less favorable outcomes regarding well-being, while Mayring (2000) found the opposite. But higher education has been associated with better short-term (Clark & Fawaz, 2009) and long-term outcomes (Wetzel et al., 2015).

Sex

Pinquart and Schindler (2007) found women more likely to be part of the group of unsuccessful retirees. Women have also been found to show a greater increase in depressive symptoms than men (Dave et al., 2008). Men and women seem to differ with respect to what matters in the retirement transition: Former job-related factors and income were found to have a greater influence on men’s well-being than on women’s (Kim & Moen, 2002; Kubicek, Korunka, Raymo, & Hoonacker, 2011), whereas social contacts (Kubicek et al., 2011) and marital quality (Kim & Moen, 2002) had a greater influence on women’s well-being. The effect of a joint retirement was found to be less long-lasting for women than for men (Szinovasz & Davey, 2004a). If retirement is perceived as forced or too early, a decline in one’s partners’ activities of daily living during the retirement transition is associated with worse well-being scores after retirement for women, but not for men (Szinovasz & Davey, 2004b), probably because women are more likely to be forced to retire to take over the caregiver role. Results may change in the future due to women’s changing social roles.

Age at Retirement

People retiring at an older age are often found to experience better well-being outcomes in retirement (Heybroek et al., 2015; Latif, 2011; Pinquart & Schindler, 2007). Nevertheless, retiring after the usual retirement age does not necessarily offer any advantages (Calvo, Sarkisian, & Tamborini, 2013). Social norms about the appropriate age to retire might play a role (Van Solinge & Henkens, 2007).

Health

Pinquart and Schindler (2007) found that people who experienced a short-time benefit from retirement were more likely to report bad health before retirement, as it might be a phase of recovery for them rather than a time of losses. On the other hand, this group also perceives particular losses later on. Other studies tend to suggest a positive association between preretirement health and well-being in retirement (Kubicek et al., 2011; Wang, 2007), as health might be crucial for adaptation (Kim & Moen, 2002).

Ethnicity

One study (Gayman, Pai, Kail, & Taylor, 2013) found that changes after retirement differed between Black and White retirees in the U. S.: White retirees experienced increases in well-being, while there was no effect among Black retirees.

Work Life

Role theory and resource approach suggest that people who have less work-related resources when retiring experience better outcomes. In line with this idea, former unemployment (Pinquart & Schindler, 2007; Wetzel et al., 2015), working part-time (Clark & Fawaz, 2009), job dissatisfaction, work stress, and physical demands (Wang, 2007) were found to predict an increase in well-being in retirement. A stronger attachment to the workplace was linked to higher depression scores after retirement for women and job satisfaction was linked to a lower postretirement morale in men (Kubicek et al., 2011). Clark and Fawaz (2009) found people in “less attractive” jobs experienced increases in well-being, while people in “more attractive” lines of work experienced losses.

Context of Retirement

The context of retirement seems to play a crucial role. If one decides to retire voluntarily, e.g., planning to spend more time with family or friends, it seems to be positively related to well-being (Hershey & Henkens, 2014). If, however, one is forced to retire, due to health or work-related reasons, it seems to have a negative impact on well-being (Calvo, Havestick, & Sass, 2009; Dingemans & Henkens, 2015; Hershey & Henkens, 2014; Rhee, Mor Barak, & Gallo, 2015; Szinovasz & Davey, 2004b, deVaus, Wells, Kendig, & Quine, 2007). Other studies also found increased maladaptive coping behavior such as alcohol consumption (Bacharach et al., 2008; Henkens, van Solinge, & Gallo, 2008). Hershey and Henkens (2014) emphasized the specific losses in autonomy and control that involuntary retirees are likely to perceive, and Dingemans and Henkens (2015) found that retiring involuntarily is associated with long-term decreases of self-efficacy.

Psychosocial Characteristics

Known stress buffers seem to help in the retirement transition. Kubicek et al. (2011) found that tenacity in goal pursuit and flexibility in goal adjustment, two general coping styles, were related to better outcomes in retirement. The same applies for higher perceived mastery before retirement (Kim & Moen, 2002). Social support (Dave et al., 2008), and being
married seems to facilitate the transition to retirement as well (Pinquart & Schindler, 2007; Wang, 2007). Among the married, however, marital problems before retirement are associated with losses in well-being during the transition period (Wang, 2007). A partner who also is at home after retirement, particularly if he or she retires in the same time, seems to ease the transition, and joint activities seem to drive this effect for men (Szinovacz & Davey, 2004a). Attachment avoidance was associated with greater losses in well-being in retirement (Karpas, Bamberger, & Bachrach, 2013), and for people scoring high on this trait, losses in income after retirement were particularly problematic. Notably, we found no study investigating the effect of Big Five personality traits on changes after retirement, but it seems that personality also can change reaction to retirement: Retirees were found to become more agreeable and less active in one study (Lökenhoff, Terracciano, & Costa, 2009), but less conscientious in another (Specht, Egloff, & Schmukle, 2011).

**Discussion**

The review sheds light on what we know about the consequences of retiring on well-being. We know that, in pretest and posttest designs, overall levels of well-being tend to remain stable over the transition to retirement. The few studies that have applied more advanced methods to study change (e.g., Pinquart & Schindler, 2007) show a certain amount of variability in the reaction to retirement. Subgroups of retirees seem to experience different changes in well-being after retirement. Some retirees experience an increase in well-being by exiting a demanding and dissatisfying workplace. Others experience a decline as they already had fewer resources before retirement to deal with the changes that occur, and assumedly lose more resources than others after the transition (Wang, 2007). How people react to retirement depends on situational and personal characteristics, and these factors need to be addressed more in future studies.

Many moderators of the effect of retirement have been identified in the studies reviewed. In general, the effects of retirement seem to depend on the individual resources that are lost or gained in retirement, and especially resources that may outweigh losses. Taken together, the findings inform us that there is a substantial heterogeneity in the response to retirement, even though we know that most retirees maintain their well-being over the event. Those who experience compromised well-being seem to be characterized by

1) more substantial losses (e.g., because they are particularly attached to their workplace or they are forced to retire), and/or

2) less resources to actually cope with retirement-related changes (e.g., because of a lack of social support).

When studying retirement, it is thus important to consider more in detail what people are leaving, what they are entering and what they actually do to deal and cope with perceived challenges related to the transition.

As noted, losses in income (Karpas et al., 2013) and financial control (Rhee et al., 2015) are associated with losses also in well-being. Furthermore, changes in perceived control and mastery go hand in hand with changes in well-being (Kim & Moen, 2002). As noted, women whose partner experiences a decline in activities of daily living between pretreatment and postretirement measurement and who retire involuntary or early, report more losses in well-being (Szinovacz & Davey, 2004b). If retirement is accompanied by a release from grandchild care obligations and thus an increase in free time, it is associated with increases in well-being for men (Szinovacz & Davey, 2006).

**Adaptive Strategies**

Unfortunately, little is still known about successful ways to adjust to retirement, i.e., associations between certain reactions and changes in well-being after retirement. Planning for retirement while still in the work force seems to be related to more positive well-being after retirement (Wang, 2007). But planning is not always good: Yeung (2013) found only psychological planning (e.g., taking part in retirement workshops) to be related to better postretirement scores in well-being, whereas the planning of many social activities before retirement was in fact associated with higher levels of distress in retirement.

Unfortunately, only one study investigated the association of change in leisure participation and well-being after retirement, but it failed to find a significant effect (Iwasaki & Smale, 1998). Dave et al. (2008) found physical activity to protect from the negative consequences of retirement. First studies indicate that planning workshops) to be related to better postretirement scores in well-being, whereas the planning of many social activities before retirement was in fact associated with higher levels of distress in retirement. Retirement seems to depend on the individual resources that are lost or gained in retirement, and especially resources that may outweigh losses. Taken together, the findings inform us that there is a substantial heterogeneity in the response to retirement, even though we know that most retirees maintain their well-being over the event. Those who experience compromised well-being seem to be characterized by

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When studying retirement, it is thus important to consider more in detail what people are leaving, what they are entering and what they actually do to deal and cope with perceived challenges related to the transition.

**Mediators**

**Changes in Resources**

Resource theory proposes that losing important resources after retirement is associated with losses in well-being. Correspondingly, a decline in health after the transition is associated with losses in well-being after retirement (Wang, 2007).
Unresolved issues

Most studies on the effects of retirement fail to address the question of actual change. Few studies (e.g., Wetzel et al., 2015) have investigated intraindividual change, i.e., change in well-being before and after retirement. Thus, few studies are able to detect if there is a change in level of well-being and in rate of change after retirement and if there might be heterogeneity in this change.

Furthermore, few studies take into account the difference between the transition period and later developments. Those that do so (e.g., Pinquart & Schindler, 2007; Wetzel et al., 2015), show that different factors contribute to specific short-term and long-term changes after retirement. While retirement might bring a special short-time benefit for some groups (e.g., people with health problems), in the long run these might be worse off than other groups and perceive particular decreases in well-being later on (Pinquart & Schindler, 2007). But how long is this first retirement transition phase? Studies based on approaches like Atchley’s (1976) are needed to better understand adaptation and typical phases during the retirement transition. Besides, no studies have actually investigated the correlative stability of indicators of well-being, which would be recommended in future studies aiming at a more detailed understanding of patterns of continuity and change.

People have also frequently neglected change-change associations, that is, how changes of resources, changes in behavior and changes in well-being travel together or influence each other. We know that changes in well-being are associated with changes in health (Wang, 2007) and perceived control (Kim & Moen, 2002). But the only study that has dealt with change in well-being and change in leisure activity (Iwasaki & Smale, 1998) is only of limited help because of the low number of participants and the restriction to physically active leisure activities.

Future studies investigating the entangled patterns of change and continuity after retirement need to focus more on the adaptive processes individuals activate during the transition. We know very little about what actually happens to people’s life when they retire and what is aspired and needed for a good life following the retirement event. Most authors speak of adaptation to life in retirement, but we do not know what adaptation really refers to in this respect. People who experience losses in well-being immediately after retirement often recover after a certain period of time and are able to stabilize their well-being (Wang, 2007). How do they reach this goal? To understand this, we need to zoom into people’s everyday life. Earlier studies are often based on cross-sectional data or suffer from small unrepresentative samples. Other results are derived from large-scale longitudinal studies that were not particularly designed to understand the retirement transition. They often lack the specific information needed, or cannot help to shed light on short-term developments because of too-long intervals between the measurements. Future studies need to investigate short-term effects after the retirement event, for example, in a measurement burst design, and ideally combine this type of data with information on long-time developments before and following retirement. Studies should also integrate information on the occurrence of adaptive styles and actions and investigate their effectiveness. This will help to better understand what people expect and how they tend to cope with losses and changes when they enter retirement.

In sum, what we know today is that retirement produces heterogeneous outcomes but the event is not a major treat on well-being for the majority of retirees. Future research needs to find out what people actually do in their everyday life in the transition period to adapt to the new circumstances.

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Declaration of Conflicts of Interest

The authors declare that no conflicts of interest exist.

References


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Study II

1. Introduction

1.1. Well-being in the transition to retirement

Retirement is an important event and often marks the transition into a new life phase with new roles, expectations, challenges and opportunities. Older theories of aging have implied that retirement represents a threat to the individual; losing the work place and thus the work role should harm individual well-being (George & Maddox, 1977). In contrast, current research shows that retirement does not have a negative impact on most people's well-being (Henning, Lindwall, & Johansson, 2016). According to recent approaches to retirement adaptation (e.g. Wang, Henkens, & van Solinge, 2011), the transition is an ambiguous event that is variably experienced. While most people do not experience substantial changes in well-being after retirement, subgroups seem to benefit or suffer from retiring (Pinquart & Schindler, 2007; Wang, 2007). Many moderators of the effect of retirement on well-being have been identified (Henning et al., 2016).

While much research has concentrated on predictors of well-being after retirement on the macro or job level, less is known about the individual level, particularly psychological factors. However, perceived control (Kim & Moen, 2002), and adjustment style (Kubicek, Korunka, Raymo, & Hoonakker, 2011) have been found to predict better well-being after retirement.

1.2. Personality in the retirement transition

Personality is so far one overlooked potential predictor of well-being after retirement. In general, there is some support for the idea that personality traits moderate the impact of life events, even though there are no clear patterns established (Boyce & Wood, 2011; Boyce, Wood, & Brown, 2010; Pai & Carr, 2010; Spinhoven et al., 2011; Yap, Anusic, & Lucas, 2012). Reis and Pushkar Gold (1993) argue that personality plays a crucial role in shaping post-retirement lifestyle and individual coping with the changing environment. Their model is based on the "Big Five" neuroticism, extraversion, openness, agreeableness and conscientiousness (Goldberg, 1993).

There are two general pathways how personality can moderate the effect of retirement. First, personality might directly affect the way people respond to the "task" of retirement adaptation, which is their way of coping with losses, using new chances, and finding new roles. Reis and Pushkar Gold (1993) assume that extraversion might help individuals to be more active during the retirement transition, find it easier to establish new friendships, deal with retirement-related institutions and persons, and view the whole retirement experience more positively. Conscientiousness should be related to more effective coping with age- and retirement related problems. Openness should ease to establish new meaningful activities, and agreeableness should facilitate new friendships. Neurotic retirees should tend to have dificulties coping with problems, view retirement itself as more negative, be self-focused and have a negative self-view.

Second, there is an indirect pathway: Throughout the life-course, cumulatively, personality traits influence (increase or decrease), the total
resources a person has, and thus also influence the situation people find themselves in when facing retirement. Support for this idea comes from studies relating personality to financial preparedness (Hershey & Mowen, 2000), reasons for retirement (Robinson, Demetre, & Corney, 2010) and the need for disability pension (Bleksaune & Skirbekk, 2012). Reis and Pushkar Gold (1993) assume that extraverted retirees should have more social support during the transition, conscientious retirees should be healthier and well-prepared for retirement, and neurotic retirees should be less prepared and have less social support.

The role of personality for retirement adjustment has received surprisingly little attention in previous research. Cross-sectional studies show associations of Big Five personality traits with life satisfaction and retirement experiences (Robinson et al., 2010), respectively retirement satisfaction and activity in retirement (Löckenhoff, Terracciano, & Costa, 2009). But, these cross-sectional results leave us uncertain about the direction of these effects – people with certain personality traits might have been more satisfied all their lives, or personality might have changed in response to retirement (Löckenhoff et al., 2009; Specht, Egloff, & Schmukle, 2011). Prospective studies are thus needed to examine if personality might ease or hamper the transition. To our knowledge, only one study has examined this research question so far. Using data from the British household panel survey, Kesavayuth, Rosenman, and Zikos (2016) found in female retirees high conscientiousness to be associated with worse outcomes after retirement, and high openness to be associated with better outcomes; but no significant effects in male retirees. Their results regarding conscientiousness are in contrast to the model by Reis and Pushkar Gold (1993) mentioned above. The authors do not offer a potential explanation for their findings; however, the findings correspond to the results from another study that found conscientiousness to be related to specific drops in life satisfaction after job loss (Boyce et al., 2010). The authors of this study argue that conscientious people might experience a particular bond to the work role and to the need to achieve success, which might also be a problem in retirement.

1.3. From personality trait to personality type

Researchers have not only focused on the impact of single traits, but also on the interaction of traits. The individual effect of one personality trait might vary, depending on other personality traits. A focus on interactions highlights that personality represents not only distinct and unrelated traits. Interactions of personality traits have been found to predict for example anger (Pease & Lewis, 2015), distress (Bardi & Ryff, 2007) or cultural intelligence (Li, Mobley, & Kelly, 2006). Using three-, four- or even five-way interactions (e.g. Pease & Lewis, 2015) with regard to the Big Five, however, tends to produce very complex patterns, often hard to detect statistically and difficult to interpret in a meaningful way. A more direct approach is offered by the identification of personality types, defined as groups of people with prototypic patterns of covariation among personality traits; i.e. subgroups of people scoring similarly on a number of specific personality traits (see Donnellan & Robins, 2010; for a review).

Different person-oriented analytical approaches can be used in identifying specific and common “types” of personality based on similar trait scores (Specht, Luhmann, & Geiser, 2014). While the aim of factor analysis is to identify items that people commonly score similarly on (variable-centered), these techniques are instead designed to identify related groups of persons that score similarly on specific items (person-centered, see e.g. Bergman & Andersson, 2000; Bergman & Magnusson, 1997). Authors of recent studies mostly use latent profile analysis (Marsh, Liddike, Trautwein, & Morin, 2009).

Personality types, derived from latent profile analysis, have been proven helpful in recent studies in predicting for example psychological health in students (Merz & Roesch, 2011), or drinking behavior in younger adults (Zhang, Bray, Zhang, & Lanza, 2015). Number and characteristics of personality types vary between studies, but many studies often tend to find three groups (see e.g. Specht et al., 2014), already established in earlier decades (e.g. Block, 1971; Robins, John, Caspi, Moffitt, & Stouthamer-Loeber, 1996); “resilients”, “undercontrollers”, and “overcontrollers”. The group characteristics differ between studies, but show similar patterns. Resilients are often described by particularly low scores on neuroticism and high scores on the other traits (Robins et al., 1996; Specht et al., 2014). Undercontrollers often score low on openness, conscientiousness and agreeableness (Dubas, Gerris, Janssens, & Vermut, 2002; Klimstra, Hale, Raaijmakers, Branje, & Meeus, 2010), and overcontrollers score low on extraversion, but high on neuroticism (Asendorpf, Borkenau, Ostendorf, & van Aken, 2001; Klimstra et al., 2010). Resilients experience favorable outcomes in most studies, while over- and undercontrollers show differential negative effects (e.g. Steca, Allessandri, & Caprara, 2010).

To our knowledge there is no study so far that has examined the role of personality profiles in the adaptation to retirement.

1.4. Research questions

In the present study, we investigate the role of personality for well-being in the retirement transition phase. We compare the traditional, trait-focused models of personality with person-oriented personality types, using two waves of a Swedish longitudinal study on retirement and aging. The following research questions are addressed:

- Does retirement influence within-person change in well-being across one year?
- Can distinct personality types based on the Big Five personality traits be identified?
- What effect do personality types and traits have on the association between retirement and change in well-being?

2. Material and methods

2.1. Sample

Data was drawn from the first two annual waves of the Swedish HEARTS (Health, Aging, and Retirement Transitions in Sweden) study, which is a longitudinal study specifically designed to examine adaptation processes, as well as change and continuity in psychological health during the pre- and post-retirement years.

HEARTS started in spring 2015 when a nationally representative sample of people aged 60–66 (N = 15,000) was drawn from the national registry. The study is mainly conducted as a web-survey, using the internet test platform “Qualtrics”. A paper-pencil version of the survey was offered in the second and final reminder. The HEARTS survey includes questions on socio-demographics, work life and retirement, health, lifestyle, well-being, social relations and personality. 5,913 individuals (~40%) participated in the first wave (69% web, 31% paper-pencil). Wave 2 was conducted in spring 2016. 4,651 (78.7%) participated in the follow-up.

For the present analyses, we selected only those participants who were not retired in 2015, resulting in a subsample of 3,792 participants. We included all participants who worked at the first time point, and not only those retiring. This was done purposely to be able to understand whether personality traits or types moderate the effect of retirement. In a study with only those retiring between waves, we would not know if the effects of personality on change in well-being are restricted to the retirement transition, or if these are other differences and changes.

We excluded participants being unemployed or on sick leave in 2015 (n = 653), as we know that the retirement transition of unemployed people differs from the one of employed people (Wetzel, Huxhold, & Tesch-Römer, 2015). This resulted in a subsample of n = 3,139. For the analyses we selected only those n = 2,797 for whom we had enough information on the personality subscales for the latent profile analysis.
However, the final $n$ for the analyses on change in well-being was reduced due to missing for the different covariates, resulting in $n = 2.655$.

2.2. Measures

2.2.1. Well-being

To assess subjective well-being, we used the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), which is commonly used as an indicator of adaptation to life events (e.g. Lucas, 2007). It is constructed from five items, answered on a 7 - point Likert scale. The scale includes items like “I am satisfied with my life”. The scale's reliability was $\alpha = 0.92$ for both time points.

2.2.2. Personality

Big Five personality traits were assessed using mean scores from the Mini IPIP (Donnellan, Oswald, Baird, & Lucas, 2006) which is a short-form of the International Personality Item Pool (Goldberg, 1999), with only 20 items, 4 per trait. Answers were on a 5-point Likert scale. We z-scored all scales for two reasons. First, it makes the personality types easier to present and compare, since all scales have different means and standard deviations. Second, this is recommended for the interaction effects in the model with traits (Aiken & West, 1991). The reliabilities were $\alpha = 0.62$ for openness, $\alpha = 0.62$ for conscientiousness, $\alpha = 0.76$ for extraversion, $\alpha = 0.65$ for agreeableness, and $\alpha = 0.62$ for neuroticism (Table 1).

2.2.3. Retirement

In Sweden, there is a relatively flexible retirement regulation. The system includes different state- and employer based pensions, and people can start to take out most of the pension from 60 years on. The following question was used in the study to measure retirement status in the survey: “Are you retired (started to take out old age pension)?” Participants could reply (a) no; (b) yes, but working and consider myself a worker; (c) yes, and working at the same time, but consider myself a retiree; (d) yes, full-time retiree. Since people who work in retirement are likely to make very different experiences than full-time retirees, we decided to code only full-time retirement as retirement. In our sub-sample, 268 (11.71%) of the participants retired full-time between waves.

2.2.4. Covariates

We controlled for several potential confounders that might contribute to baseline and change in well-being. We included education, age, health status, gender and job rank at the first assessment. Specifically, we used years of education and the number of reported diseases and symptoms from a long list, including for example high blood pressure, migraine, diabetes, but also cancer or stroke. The number of diseases/symptoms ranged from 0 to 22. People who did not report any disease were coded as 0, even though this might be criticized since this might also include missing values. Gender was coded 0 = male and 1 = female. Job rank was assessed by one item as well (1 = personnel responsibility for more than 30 persons, 2 = responsibility for 10–30 persons, 3 = responsibility for 1–10 persons, 4 = no responsibility). Higher values represent lower job rank.

2.3. Analysis

We used a latent change score model in Mplus 7.4 (Muthén & Muthén, 2015) to analyze change in well-being over time. With this model, it is possible to investigate “true change” instead of difference between raw scores (see e.g. McArdle, 2009). We predicted well-being at the first occasion, as well as the change between T1 and T2. Change in well-being was predicted by initial well-being to account for a potential regression to the mean. We used full information maximum likelihood (FIML) estimation to account for missing data. Well-being was measured as a latent factor at both time points. To test for measurement invariance across time, we compared CFI fit instead of $\text{Chi}^2$ because of our large sample size according to current recommendations (Milfont & Fischer, 2010).

In a first model, we predicted baseline and change in well-being by retirement (as a dummy variable) and covariates, to investigate the effect of retirement. We then investigated personality types using latent profile analysis in MPlus (Muthén & Muthén, 2015). We used Bayesian Information Criterion (BIC), the sample size adjusted BIC, and the entropy (accuracy of profile classifications) as fit indices (see e.g. Nylund, Asparouhov, & Muthén, 2007). The adjusted Lo-Mendell-Rubin Test was used to test competing models against each other, starting with a one-class model. It has been argued that too small classes (<5%) indicate too many classes (Merz & Roesch, 2011), so we also considered class size in our decision. We assumed equal variances in the groups in our models and used the resulting class-membership variable as a predictor in further analyses.

We then predicted well-being by personality type (dummy coded indicators), retirement and covariates, and added retirement × type interactions in a second model. In a last step we repeated this analysis, but with personality traits instead of types.

3. Results

In a first step, we tested for measurement invariance of well-being across time. The model fit (CFI) for a model with only well-being at T1 and T2 did not decrease more than 0.002 from configural to weak, strong and strict invariance, which would have been the cut off criterion (Meade, Johnson, & Braddy, 2008). Accordingly the final model was a model with strict invariance. The model fit was very good (CFI = 0.97, TLI = 0.95, RMSEA = 0.09, $\text{Chi}^2(39) = 1027.68$, $p < 0.001$, SRMR = 0.03).

In the next step, we constructed a latent change score model without predictors ($n = 2.796$). The model fit for this model was good (CFI = 0.96, TLI = 0.95, RMSEA = 0.09, 95% CI [0.087; 0.097], $\text{Chi}^2(42) = 1031.76$, $p < 0.001$, SRMR = 0.03). The mean well-being at T1 was 4.4 ($p < 0.001$; $\sigma^2 = 1.51$). The mean change was not significant ($M = 0.02$, $p = 0.38$), but had a significant variance ($\sigma^2 = 0.75$, $p < 0.001$). The significant variance means that while there was no significant overall change in our sample, it was appropriate to investigate what variables may explain this variance in change.

Means and standard deviations of the variables of interest can be found in Table 1.

3.1. The effect of retirement on change in well-being

We then added retirement and important covariates to the model, to predict baseline and change in well-being. Table 2 shows there was no difference at baseline in well-being between people about to retire and those who would continue to work. However, there was a significant positive main effect of retirement on change in well-being, controlling for the effects of gender, age, health, education and job rank: Retiring people experienced stronger increases in well-being than

<table>
<thead>
<tr>
<th>Measure</th>
<th>M (SD)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well-being (T1)</td>
<td>4.4 (0.03)</td>
<td>2.796</td>
</tr>
<tr>
<td>Well-being (T2)</td>
<td>4.42 (0.03)</td>
<td>2.796</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>2.33 (0.80)</td>
<td>2.797</td>
</tr>
<tr>
<td>Extraversion</td>
<td>3.24 (0.92)</td>
<td>2.796</td>
</tr>
<tr>
<td>Openness</td>
<td>3.45 (0.83)</td>
<td>2.796</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>3.93 (0.70)</td>
<td>2.796</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>3.98 (0.72)</td>
<td>2.797</td>
</tr>
<tr>
<td>Age</td>
<td>62.18 (1.72)</td>
<td>2.779</td>
</tr>
<tr>
<td>Number of diseases</td>
<td>5.14 (3.67)</td>
<td>2.797</td>
</tr>
<tr>
<td>Education (years)</td>
<td>13.82 (3.39)</td>
<td>2.719</td>
</tr>
<tr>
<td>Job rank (1-5)</td>
<td>3.70 (0.71)</td>
<td>2.759</td>
</tr>
<tr>
<td>Female participants</td>
<td>54%</td>
<td>2.780</td>
</tr>
</tbody>
</table>
those not retiring. We interpret the negative effect of baseline well-being on change in well-being as regression to the mean: The individual well-being is likely to fluctuate across waves, and for those with particularly high well-being, there is little space above, but more below their initial well-being level, so they are more likely to show lower well-being at the second time point. The significance and size of this effect suggests that well-being is positively skewed in our sample.

### 3.2. Personality types

As a next step, in correspondence to our second research question, Table 3 shows the results from the latent profile analysis. Test and fit indices did not show a uniform pattern: While both BIC and SSA-BIC got smaller with every new model, which indicates better fit, the entropy was best at the three class solution. The adjusted LMR test suggested a better fit of the concurrent model to the earlier one until the 5-class solution. But, as the five-class solution included a group that was very small, we decided to use the four-class solution in the following models.

Fig. 1 illustrates the types, and Table 4 shows mean scores on the personality traits. We found one large (40.5%) group with above-average scores on openness, conscientiousness, extraversion, and agreeableness, and below-average scores of neuroticism. In accordance to earlier research, we found one large (40.5%) group with above-average scores on openness, conscientiousness, extraversion, and agreeableness, but low scores on neuroticism, and particularly low on conscientiousness; they therefore were labeled “undercontrollers”. A second group (13.2%) scored highest on openness, slightly above average on agreeableness, and particularly low on conscientiousness; they were therefore labeled “free spirits”. A third group (8.7%) had low scores on openness and extraversion, high scores on neuroticism, and particularly low scores on conscientiousness and agreeableness. In line with earlier literature we label this group as “undercontrollers”, even though they also showed some characteristics of so-called “overcontrollers”.

### 3.3. Personality types, retirement and well-being

As a next step, we computed two latent change score models including retirement, personality types as well as the covariates as predictors. The first model did not include interaction effects, the second did (see Table 5). The “resilient” group was used as the reference group. Compared to the resilient, all personality types scored lower on baseline well-being, but there was no difference in change in well-being. Again, we found that those retiring experienced significantly stronger increases in well-being.

When including interaction effects, we found that the effect of retirement differed between personality types: There was a significant negative interaction effect between retirement and the group undercontrollers, larger than the main effect. The effects are illustrated in Fig. 2. While those retiring experienced stronger increases in well-being than those continuously working; this was not true for undercontrollers: Retirement was associated with losses in well-being in this group.

### 3.4. Personality traits, retirement and well-being

We repeated the same models using personality traits instead of types (Table 6). Neuroticism had a negative effect and extraversion had a positive effect on both baseline and change in well-being. Openness and conscientiousness had positive effects on baseline well-being, but not on change in well-being. After including interaction effects, we found a positive interaction effect between agreeableness and retirement on change in well-being, which means that those who retired and scored high on agreeableness demonstrated particularly strong increases in well-being.

### 4. Discussion

#### 4.1. General discussion

In this study, we examined personality as a moderator of the effect of retirement on change in well-being across one year in a sample of Swedish older adults.

Our first research question was if retirement had an effect on change in well-being and our findings offer support for this assumption. In line with previous research (e.g. Latif, 2011; Reitzes, Mutran, & Fernandez, 1996; Wetzel et al., 2015) we found a positive effect, meaning that people who retired between waves, in general, experienced stronger increases in well-being than people who remained in the workforce, controlling for baseline differences in covariates. As we only have a one-year follow-up, it remains unclear if this is only a short-term “honeymoon effect” (Atchley, 1976), or if the effect is long lasting. This result does, however, show that claims about retirement as a general crisis (see e.g. Ellison, 1968) are not supported in our sample.

Our second research question was whether we could identify subgroups, or types, with specific patterns of scores on the Big Five personality traits. We used this approach to consider possible complex interactions between personality traits. A four-class solution suited the data best so we used these four personality groups in our further analysis. We labeled the groups “resilients”, “withdrawn”, “free spirits”, and “undercontrollers”. Two of these groups (resilients and undercontrollers) are found also in previous studies, but the two others constitute new groups.

Resilients, who had high scores on extraversion, openness, agreeableness and conscientiousness, but low scores on neuroticism, had the highest well-being scores at baseline. This is in line with previous research (e.g. Steca et al., 2010). Personality type did not predict change in well-being in general.

To answer our third research question, we investigated if personality moderated the effect of retirement. The model of Reis and Pushkar Gold (1993) shows possible reasons for the effect of personality on change in
well-being after retirement. First, personality itself might be a resource to cope with losses, interact with authorities, establish new friendships and find meaningful activities in retirement. Furthermore, groups with different personality profiles might differ in the availability of resources (e.g. social support) even before retirement, helping with challenges during the transition.

Our overall finding that those who retired experienced stronger increases after retirement compared with those not retiring cannot be generalized for people with a certain personality profile. Retirement had in fact a negative effect on well-being for "undercontrollers". This fits well to the above model of Reis and Pushkar Gold (1993). Following this model, high scores on agreeableness, extraversion, openness and conscientiousness should be important to master the transition, whereas high scores on neuroticism are expected to have a negative effect. The undercontrollers, who showed low levels of agreeableness, extraversion, openness and conscientiousness, but high scores in neuroticism, were thus likely to experience a less positive retirement transition. Following Reis and Pushkar Gold (1993), the undercontrollers' neuroticism could be related to a negative attitude towards retirement, a negative self-appraisal, less preparation and weak problem solving skills. Due to low agreeableness, extraversion and openness, they would have less social support and also greater problems finding new friends and activities. Their low conscientiousness would be related to weaker problem solving skills, including less preparation for retirement.

Next, we repeated the analyses for traits. We found positive effects of extraversion, openness, and conscientiousness on baseline well-being, while neuroticism had a negative effect. These results are in line with earlier research on personality and well-being which consistently found extraversion to be related to higher, and neuroticism to lower well-being (Diener & Lucas, 1999). Other studies have found both openness (Headey & Wearing, 1989) and conscientiousness (Hayes & Joseph, 2003) to be associated with well-being as well. Extraversion also had a positive and neuroticism a negative effect on change in well-being in our study.

In the trait-focused models, we found a positive interaction effect between agreeableness and retirement on change in well-being. This speaks in favor of the importance of agreeableness for a smooth retirement transition, and also partly supports the model of Reis and Pushkar Gold (1993): Highly agreeable people probably find it easier to establish new relations that replace work-related contacts, and to gain social support during the adaptation period.

Our results differ from those by Kesavayuth et al. (2016) reported above, which might partly be related to the fact that they split their analysis by gender. However, their results for the whole sample also showed negative effects of conscientiousness and positive effects of neuroticism, contrary to our results. The differences may reflect sample and context characteristics. First, there might be country-specific differences and a successful retirement transition might require other adaptation styles and resources. Furthermore, different selection effects might occur. For example, we have a very educated and healthy sample, and we might only capture a specific segment of the population. Perhaps more importantly, we used different instruments to assess well-being and personality. Kesavayuth et al. (2016) used a single item to assess well-being, and a brief version of the Big Five Inventory (John, Donahue, & Kentle, 1991) for personality, while we administered the satisfaction with life scale (Diener et al., 1985) and the Mini-IPIP (Donnellan et al., 2006).

Our two analytical approaches (types vs. traits) produced different results which raise questions concerning the most parsimonious model for an improved understanding of the retirement transition?

Table 4
Means and standard deviations of the personality traits in the four types using standardized scores.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Resilients (n = 1,140)</th>
<th>Withdrawn (n = 1,067)</th>
<th>Free spirits (n = 389)</th>
<th>Undercontrollers (n = 201)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M(SE)</td>
<td>M(SE)</td>
<td>M(SE)</td>
<td>M(SE)</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>-0.27 (0.04)</td>
<td>0.09 (0.04)</td>
<td>0.03 (0.07)</td>
<td>0.41 (0.08)</td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.53 (0.07)</td>
<td>-0.45 (0.06)</td>
<td>0.16 (0.08)</td>
<td>-0.65 (0.09)</td>
</tr>
<tr>
<td>Openness</td>
<td>0.40 (0.05)</td>
<td>-0.45 (0.05)</td>
<td>0.57 (0.09)</td>
<td>-0.52 (0.08)</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>0.67 (0.05)</td>
<td>-0.49 (0.1)</td>
<td>0.44 (0.06)</td>
<td>-1.25 (0.15)</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>0.53 (0.04)</td>
<td>0.12 (0.07)</td>
<td>-1.24 (0.09)</td>
<td>-1.43 (0.16)</td>
</tr>
</tbody>
</table>

Note. Scores are z-scored with a mean of 0 and a standard deviation of 1.
We can think of different ways to compare the approaches. First, we can evaluate the results solely in statistical terms. Then we find that the explained variance for change in well-being only differs slightly ($R^2 = 0.148 / 0.142 = 0.157$). The fit indices do not differ from each other strongly either.

Another approach is to compare the results from the theoretical perspective: We find that the results of the person-centered approach fit well to the theoretical expectations from Reis and Pushkar Gold (1993), since those showing scoring low on agreeableness, openness, extraversion and conscientiousness, but high on neuroticism, experience a more problematic retirement transition. Baseline differences are in line with other studies showing disadvantages for undercontrollers and advantages for resilients, also in older age (Steca et al., 2010). The trait-focused model suggests that only low agreeableness is responsible for the negative effect of retirement among undercontrollers. Nevertheless, if this was the case, we would expect the withdrawn group with below-average scores on agreeableness also to show problems in retirement, compared to resilient persons with above-average agreeableness.

In the end, the interpretation depends on the researcher’s conception of personality. From a person-centered view, personality is understood as a holistic construct in which interactions among individual traits define the individual personality profile. As outlined above, we cannot investigate more complex interactions between personality traits using usual variable-centered models which make us argue that it is valuable to examine the combination of personality traits, i.e. the “personality type” to achieve a better understanding of the adaptation to retirement.

4.2. Strengths and limitations

One limitation of the study is the potential selectivity of our sample. The original sample, drawn from the registry, was representative of the respective population. However, among the actual participants, healthy and higher educated participants are overrepresented. Although we tried to control for this bias, it is unclear whether we can generalize these findings. A further limitation is that we only had two waves of data available for the analyses. Thus, we only examine short-time effects of retirement. It might even be that our findings do not indicate different reactions to retirement, but rather different long-term trends before and after retirement. Other studies have shown that it is valuable to distinguish between the reaction to life events as retirement, and the...
adaptation period later on (Yap et al., 2012; Wetzel et al., 2015). Thus, we do not know if personality only has an impact on short-time reactions to retirement, although we assume that personality also predicts long-time adaptation. Additionally, we only investigated change in well-being across the transition, but not change in personality, because of a lack of longitudinal data on the Big Five traits. Lükenhoff et al. (2009) and Specht et al. (2011) found changes in personality after retirement. In the first study, people increased in agreeableness but decreased in activity, while in the latter study, people decreased in conscientiousness. Furthermore, personality and well-being reciprocally influence each other (Soto, 2015), and we investigated only one direction of the effect, without considering correlated change (Allemand & Martin, 2016). Interindividual differences in personality change are likely also related to the retirement context, including social and cultural circumstances which should be investigated in further studies. Furthermore, we only focused on full-time retirement, leaving us with questions about the role of personality for bridge employment. Finally, we did not investigate other moderators and potential mechanisms of the effect of personality on well-being after retirement. We only included personality as a moderator, and it would be interesting to further investigate the association of personality with other potential moderators of the retirement transition, such as reasons for retirement (Robinson et al., 2010) or post-retirement financial situation (Segel-Karpas, Bamberger, & Bacharach, 2013).

Nevertheless, our results add to the literature in several ways. Our findings suggest a significant role of personality in the retirement transition, which has rarely been done before. Personality types, derived from latent profile analysis, previously more often used in cross-sectional studies, seem to provide valuable information in predicting future outcomes beyond that of traditional trait-focused models. In this respect our study combined personality types and retirement.

Further studies including several measurement occasions are needed to confirm the generalizability of our results and to evaluate whether the observed short-term effects of personality persist. Finally, it should be investigated whether the effect of personality mostly depends on pre-retirement resources, the individual retirement context, or if it reflects how people tend to respond to the retirement transition.

Acknowledgements

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References


