

Change and Continuity in Psychological Health Across the Retirement Transition

Interindividual Differences and Post-Retirement Adjustment

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To Eva

“Hasn't your experience with the Time-Turner taught you anything, Harry? The consequences of our actions are always so complicated, so diverse, that predicting the future is a very difficult business indeed...”
J.K. Rowling¹

¹ Rowling, J.K. (2014). Harry Potter and the prisoner of Azkaban (p.453). London: Bloomsbury Publishing PLC.

Abstract

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Retirement is an important life event. Individuals leave their place of work, which often played a vital part in their daily lives, and enter a new phase of life with new opportunities, new challenges and new roles. The overarching aim of the present thesis is to shed light on changes in psychological health across the transition to retirement. All studies were based on the longitudinal Health, Aging and Retirement Transitions in Sweden (HEARTS) study, which follows older Swedish adults ($n = 5,913$, aged 60-66 at baseline) during the last years of their working life and first years of retirement with annual assessments. In Study I, we investigated if personality types and Big Five personality traits moderated the effect of retirement on life satisfaction. We used data from two waves of HEARTS and included participants working at baseline ($n = 2,797$). We found that those retiring between waves showed higher increases in life satisfaction than those who did not. In latent change score models based on personality types, retirement was associated with decreases in life satisfaction for one group, characterized by low openness, agreeableness, extraversion and conscientiousness, but high neuroticism. In models including personality traits, high scores on agreeableness enhanced the increases in life satisfaction. In Study II, also based on two waves, we investigated if sub-dimensions of work motivation predicted change in basic psychological need satisfaction (autonomy, competence, relatedness) differently for full-time ($n = 247$) or working retirees ($n = 325$). High intrinsic work motivation before retirement was associated with lower increases in autonomy for full-time retirees, and with higher increases in relatedness for working retirees. High amotivation was associated with stronger increases in relatedness for working retirees, which is most likely a result of changes in one's work situation after starting to take out pensions. In Study III, we investigated if the association of need satisfaction and life satisfaction changes after retirement, which may imply reprioritization. Based on four waves of the HEARTS study ($n = 5,074$), we found that autonomy was more strongly associated with life satisfaction after retirement than before on the within-person level. On the between-person level, higher competence was significantly associated with lower life satisfaction among workers and associated with higher life satisfaction among retirees, although not significantly. In Study IV, also based on four waves, we found that retiring participants ($n = 1,124$) increased their level of physical, intellectual and social leisure activity

engagement, but mainly directly after retirement. Level and change in leisure activity and depressive symptoms were associated, but the direction of causality remains unclear. Taken together, the four studies show a substantial heterogeneity in change in psychological health across the retirement transition and evidence for post-retirement adjustment behavior. More research is needed to understand more in detail how different people adjust to retirement and which factors support this process.

Keywords: adaptation; leisure activity; personality; retirement adjustment; self-determination theory; well-being; work motivation

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Svensk sammanfattning

Att lämna arbetslivet och gå i pension markerar starten för en ny livsfas med nya roller och möjligheter, men också med nya utmaningar. Tidigare forskning om pensioneringsprocessen har huvudsakligen jämfört redan pensionerade personer med personer som fortfarande är kvar i arbetslivet. I denna avhandling baseras i stället analyserna på en design där vi kunnat *följa människor innan och efter pensioneringen, genom återkommande årliga mätningar*. Denna, sk. longitudinella design gör att vi kan undersöka vad som händer med individer över tid, och hur man förändras när man går i pension. Personerna som undersöks är i detta avseende sina egna kontroller. Genom att följa samma människor kan vi alltså bättre förstå hur man anpassar sig till pensionärlivet. Fokus för avhandlingen är på den psykiska hälsan och hur den förändras och hur man anpassar sig till pensionärlivet efter egna förutsättningar och villkor.

De fyra studier som ligger till grund för avhandlingen är baserade på den longitudinella studien ”Health, Aging and Retirement Transitions in Sweden (HEARTS)”. Våren 2015 bjöds nästan 15’000 personer, då i åldern 60-66 år, in att besvara en omfattande enkät. Av dessa svarade 5’913, vilka sedan har kontaktats varje år med uppföljande enkäter. Merparten av frågorna har varit desamma vid varje undersökningstillfälle. Frågorna har besvarats via webben eller i form av en postenkät för personer som föredragit detta format.

Studie I handlar om *hur personlighet påverkar livstillfredsställelse vid pensioneringen*. Personlighet är en viktig faktor för den psykologiska hälsan över hela livet. Vår personlighet kan även påverka hur vi anpassar oss till förändringar och nya livsfaser. Trots detta har väldigt lite forskning fokuserat just på hur personlighet påverkar anpassningen till pensionärlivet. Genom att jämföra data från två undersökningstillfällen av HEARTS ($n=2,797$) kunde vi undersöka hur personlighetstyper och personlighetsdrag påverkar livstillfredsställelse från ett år till nästa. Genom sk. latent profilanalys identifierade vi *fyra personlighetstyper* (dvs grupper med liknande personlighetsdrag). Genom att

gå vidare med latenta förändringsmodeller kunde vi konstatera en mer positiv förändring av livstillfredsställelse hos dem som gick i pension under studiens gång jämfört med de som inte gick i pension. Resultatet innebär således att för de flesta är pensionen kopplad till högre livstillfredsställelse. Vi identifierade också en personlighetstyp som upplevde lägre livstillfredsställelse. Dessa personer karaktäriserades av låg öppenhet, samvetsgrannhet, extraversion, och vänlighet, och högre grad av neuroticism. När vi i stället för personlighetstyper baserade analyserna på enskilda personlighetsdrag visade det sig att en högre grad av vänlighet och värme ("agreeableness") var förenad med en mera positiv förändring i livstillfredsställelse efter pensioneringen.

Slutsatsen av studie I är att personlighet har en betydande effekt på hur väl man anpassar sig till pensionärlivet och bedömer sin egen livstillfredsställelse.

I **Studie II** undersökte vi *sambanden mellan arbetsmotivation och förändring av tre grundläggande psykologiska behov (autonomi, kompetens och anknytning) vid övergången till pensionslivet. Detta gjordes som en jämförelse mellan personer som var heltids- och deltidspensionerade (n = 572)*. Tidigare forskning har visat att erfarenheter från arbetslivet spelar roll för hur man anpassar sig livet som pensionär. Man har då sett att *olika dimensioner av arbetsmotivation* (exempelvis inre motivation eller motivationsbrist) är kopplade till exempelvis arbetsprestation, intentioner att byta jobb, och välmående. Det är dock fortfarande oklart hur olika dimensioner av motivation är kopplade till anpassning till pensionärlivet. Genom att använda latenta förändringsmodeller kunde vi se att de som gick i pension upplevde ökad autonomi, men oförändrad kompetens och anknytning. Heltidspensionerade upplevde högre autonomi än deltidspensionerade. Lägre inre motivation innan pensionering var kopplad till högre autonomi för dem som gick i heltidspension, men inte för dem som gick i deltidspension. Högre inre motivation innan pensioneringen visade sig dock ha ett samband med en ökad anknytning bland deltidspensionerade, vilket inte var fallet för de heltidspensionerade. Detta samtidigt som motivationsbrist var kopplad till en ökning av anknytning efter pensionering för

deltidspensionerade, vilket skulle kunna bero på förändringar i arbetssituationen efter deltidspensioneringen.

Sammanfattningsvis pekar Studie II på att tidigare arbetsmotivation är en viktig faktor både för personer som går i heltids- och i deltidspension.

I **Studie III** analyserade vi sambanden *mellan basala psykologiska behov (autonomi, kompetens och anknytning) och livstillfredsställelse*. Tillfredsställelse av basala psykologiska behov anses vara avgörande för vårt välmående. Även här saknades tidigare forskning om hur tillfredsställelse av sådana basala psykologiska behov påverkar vårt välmående. Vi förväntade oss att människor vid pensioneringen tenderar att göra en omprioritering av hur man värderar att olika basala psykologiska behov är tillfredsställda. Detta eftersom pensioneringen är förenad med många nya utmaningar och möjligheter. Genom att använda hierarkiska regressionsmodeller på data från fyra av HEARTS årliga undersökningstillfällen ($n = 5,074$) kunde vi analysera samband mellan livstillfredsställelse och hur man uppfattade att de basala psykologiska behoven var tillfredsställda. I linje med våra förväntningar var tillfredsställelse av de basala psykologiska behoven kopplade till högre livstillfredsställelse på inompersons-nivån. Den positiva effekten av autonomi var starkare när deltagarna gick i pension, jämfört med innan pensioneringen. En jämförelse mellan pensionerade och de som arbetade (dvs en mellan-persons-effekt) visade att autonomi och anknytning hade samma effekt på livstillfredsställelse för båda kategorierna. Däremot var högre kompetens kopplat till en signifikant lägre livstillfredsställelse bland yrkesarbetande, samtidigt som vi inte såg någon effekt av kompetens för livstillfredsställelse hos pensionerade.

Studie III visar att de basala psykologiska behoven har en stark koppling till livstillfredsställelse både innan och efter pensioneringen, trots att den relativa betydelsen av de olika behoven kan förändras.

I **Studie IV** undersökte vi *förändringar i fritidsaktiviteter vid övergången till pensionslivet*. Sådana aktiviteter har tidigare setts som särskilt viktiga för hur man klarar anpassningen till pensionärlivet. Tidigare forskning har dock

inte kunnat visa hur sambanden påverkas vid pensionsövergången eller vilka konsekvenser dessa aktiviteter har för den psykiska hälsan. Vi använde här data från fyra undersökningstillfällen med HEARTS årliga enkäter och vi fokuserade exklusivt på de personer som gick i pension under studiens gång ($n = 1,124$). Med tillväxtkurvor från strukturella ekvationsmodeller kan vi visa att engagemang i intellektuella, sociala samt fysiska fritidsaktiviteter ökade från det sista året i arbetslivet till det första året som pensionerad för att därefter vara relativt stabil. Vi kunde också se att det finns ett samband mellan fritidsaktiviteter och symptom på depression. Personer som var mer engagerade i sociala och intellektuella fritidsaktiviteter innan de gick i pension visade färre depressiva symptom. De som var mer engagerade i sociala och fysiska aktiviteter rapporterade en minskning av depressiva symptom över tid. De som hade mer depressiva symptom innan de gick i pension uppvidade en mindre ökning av sitt engagemang i intellektuella och sociala fritidsaktiviteter. De tillfällen när undersökningssdeltagarna rapporterade sitt största engagemang i fysiska och intellektuella fritidsaktiviteter var också kopplade till de lägsta nivåerna av depressiva symptom.

Slutsatsen av Studie IV är att det finns ett positivt samband mellan engagemang i olika fritidsaktiviteter och psykologisk hälsa och därmed anpassningen till pensionärlivet. Vidare forskning fordras dock för att besvara frågan om vad som är den drivande faktorn för dessa samband.

De fyra delstudierna visar att det finns påtagliga skillnader i hur den psykologiska hälsan förändras vid övergången till pensionärlivet. För att förstå mekanismerna bakom denna heterogenitet (den stora spridningen i utveckling av psykologisk hälsa vid pensioneringen) fordras en undersökningsdesign som gör det möjligt att longitudinellt studera hur enskilda individer förändras över tid och med beaktande av faktorer som har betydelse för hur man planerar, hanterar och upplever pensionsövergången. I avhandlingen identifierade och analyserade vi därför några faktorer (personlighet, tidigare arbetsmotivation och fritidsaktiviteter) som kan ha betydelse för vårt välbefinnande och livstillfredsställelse. Det är således många faktorer som i samspel kan påverka hur vi

upplever vår psykiska hälsa före och efter pensionering. Avhandlingen visar också att människor anpassar sig till pensionslivet både genom livsstilsförändringar, genom att omvärdera kraven på sitt eget välmående.

Denna avhandling ger en ökad förståelse av komplexiteten i övergången från arbetslivet till pensionärlivet, både i en svensk kontext, men även mer generellt. Förhoppningen är denna kunskap kan bidra både till mer forskning men kanske främst till policyförändringar som bidrar till ett hållbart pensions-system och ur ett psykologiskt perspektiv.

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Georg Henning, August 2019

Preface

This thesis consists of a summary and the following four papers, which are referred to by their roman numerals:

- I Henning, G., Hansson, I., Berg, A.I., Lindwall, M., & Johansson, B. (2017). The role of personality for subjective well-being in the retirement transition – Comparing variable- and person-oriented models. *Personality and Individual Differences, 116*, 385-392. doi: 10.1016/j.paid.2017.05.017
- II Henning, G., Stenling, A., Tafvelin, S., Hansson, I., Kivi, M., Johansson, B., & Lindwall, M. (2019). Preretirement work motivation and subsequent retirement adjustment: A self-determination theory perspective. *Work, Aging and Retirement, 5*, 189-203. doi: 10.1093/workar/way017
- III Henning, G., Bjälkebring, P., Stenling, A., Thorvaldsson, V., Johansson, B., & Lindwall, M. (2019). Changes in within- and between-person associations between basic psychological need satisfaction and well-being after retirement. *Journal of Research in Personality, 79*, 151-160. doi: 10.1016/j.jrp.2019.03.008
- IV Henning, G., Stenling, A., Bjälkebring, P., Bielak, A.A.M., Gow, A.J., Kivi, M., Muniz-Terrera, G., Johansson, B., & Lindwall, M. (under review). Towards an active and happy retirement? Changes in leisure activity and depressive symptoms during the retirement transition.

Chapter 1

Chapter 1
Psychological Health
Across the Retirement Transition

1.1 An Introduction to the Study of Retirement Adjustment

1.1.1 The growing importance of 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 left work life. Although 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. For example, around 1900, only 7% of the Swedish population was older than 65 (Mirkin & Weinberger, 2001).

During the 130 years since the introduction of this pension system, strong demographic change has occurred, especially in Western countries (Anderson & Hussey, 2000; Bongaarts, 2004). Particularly over the last decades, population ageing has increased and in 2018, already 19.8% of the Swedish population was older than 65 (Eurostat, 2019). The Swedish old age dependency rate, which is the ratio of people over 65 to people over 15, was 31.7% (Eurostat, 2019). More and more people reach retirement age, and because life expectancy increases, they stay retired for longer periods. 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 remarkably (Bongaarts, 2004). Second, retirement has become a normative life event; people are expected to retire some day 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 presumably 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 in 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 backgrounds and interests. Szinovacz (2012) conceptualizes retirement as a multilevel process. At the individual (micro-) level, retirement is an individual transition including individual planning, decision-making, the transition itself and changes in status and role. The individual retirement is embedded in an 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. Research is conducted on all levels.

In the present thesis, I follow the line of other psychological studies focusing on the individual level, and more specifically on retirement adjustment (Wang & Shi, 2014). Whereas much of the literature on retirement is focused on understanding why, when and under which circumstances retirement takes place (Feldman & Beehr, 2011), my focus is on individual differences in the reaction and adaptation to retirement (Wang et al., 2011). I do not study self-rated adjustment to retirement or satisfaction with retirement (van Solinge & Henkens, 2008), but conceptualize retirement adjustment as change in psychological health across the retirement transition, which is common in research on retirement (Wang, 2007; Van Solinge, 2012). Such an approach allows distinguishing pre-retirement differences or selection effects from differential change (Van Solinge, 2012). In line with Lindwall et al. (2017), I use the term psychological health as an umbrella term for different facets of well-being and mental health.

1.1.2 Reasons to study retirement adjustment

Investigating retirement adjustment is interesting for three main reasons: First, it is always important to understand if and for whom psychological health changes after life events. Level and change in psychological health are highly relevant for the individual and an overall common goal (Yap, Anusic, & Lucas, 2014), and they have important consequences for individual behavior and motivation (Luhmann & Hennecke, 2017). Psychological health constitutes a base for future development and resource acquisition of a person (Tesch-Römer, Wiest, & Wurm, 2010), and is an important predictor of different health-related outcomes and mortality (Bjälkebring & Johansson, 2017; Diener & Chan, 2011; Howell, Kern, & Lyubomirsky, 2007; Hülür et al., 2017; Lindwall, Larsman, & Hagger, 2011; Martin-Maria et al., 2017). Moreover, the individual change in psychological health when adapting to life events can predict longevity (Infurna et al., 2017), and there is some first evidence that retirement adjustment problems are associated with worse cognitive health after retirement (Grotz et al., 2017).

Second, the study of retirement adjustment offers particular 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 a new financial situation (Segel-Karpas, Bamberger, & Bacharach, 2013). How successfully retirees master this transition, and which strategies they use, can help us to understand general development in older age.

Finally, the study of retirement adjustment can help identifying structural problems and needs in the public. If retirement constitutes a rather negative life event with detrimental consequences for psychological and physical health, this is a further argument for public efforts to raise the retirement age, apart from structural economic reasons. If retirement is perceived as a positive life event and helps to recover from an unhealthy work life, political actions need to be planned accordingly. Studying interindividual differences in adjustment also helps identifying sub-populations at risk and resulting social inequality (König, Lindwall, Henning, & Johansson, 2018).

1.1.3 The context of the present thesis

The background of this thesis is in life span psychology, which is the study of human development over the whole life. The focus in life span psychology is on general development, interindividual differences in development, as well as intra-individual plasticity (Baltes, Lindenberger, & Staudinger, 2006). This is mirrored in research on retirement adjustment by focusing on general effects of retirement on the individual, individual differences in the reaction to retirement, and adaptation. Life span development is multidimensional and multidirectional and includes both gains and losses (Baltes, 1987). Adopting these principles to research on retirement adjustment, I assume that different facets of psychological health can change in different ways after retirement, and hence, depending on the individual and the domain investigated, there is the possibility of both increased and decreased psychological health.

Life span research has further acknowledged the importance of the historical and cultural context of development (Baltes, 1987; Baltes et al., 2006). To my knowledge, there are no studies on historical changes in retirement adjustment. Nevertheless, a number of recent papers show that age-related trajectories of psychological health are indeed prone to cohort effects (Gerstorf et al., 2015; Hülür, Gerstorf, & Ram, 2015; Hülür et al., 2016). Hence, the effect of retirement might also change over historical time, as for example older adults' health status (Christensen et al., 2013; Hörder, Skoog, Johansson, Falk, & Frändin, 2015) views on aging (Beyer, Wurm, & Wolff, 2017) and retirement regulations (Hess, König, & Hofäcker, 2016) are constantly changing. In addition, there is a large increase in female labor market participation over time,

although work and retirement patterns still differ between genders (Dingemans & Möhring, 2019; König, 2017), which could lead to specific changes in female retirement adjustment patterns across historical time. The studies included in this thesis are all based on data from 2015 to 2018, and should therefore be viewed and interpreted in the context of this period.

The importance of the sociocultural context of development around the retirement transition can be seen in cross-national differences in reported adjustment to and perceptions of retirement (Fouquereau, Fernandez, Fonseca, Paul, & Uotinen, 2005). These effects might partly result from differences in the availability of financial resources for the older population in the respective countries, but also from differences in the availability of crucial non-financial resources, such as meaningful roles and social contacts for retirees. It is therefore important to consider that scientific findings can be specific to the national context with particular cultural norms and institutional regulations. All studies in this thesis are based on a sample of Swedish older adults. Sweden represents a rather egalitarian society with a comparably low rate of poverty in old age (Ebbinghaus & Neugschwender, 2011). Sweden is a strong welfare state with a high rate of older adults on the labor market and women are more likely to work in older age compared to other countries (Hofäcker, Hess, & König, 2019; König & Sjögren Lindquist, 2016). Sweden has a flexible retirement age; currently, 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 to accumulate a sufficient pension income (König & Sjögren Lindquist, 2016). At the same time, it is possible to retire only part-time and continue to work while taking out pensions (Wadensjö, 2006). Older adults have the right to work up to 67, but if their employer agrees, they can continue.

Thus, the challenges and opportunities in the Swedish system may differ from other societies. In this respect, the results of the studies presented in this thesis may not be representative for other countries.

1.2 Theoretical Approaches to Retirement Adjustment

Various theoretical approaches have been applied to the study of retirement adjustment over time (for longer overviews, see e.g. van Solinge, 2012; Wang, 2007; Wang et al., 2011). Early studies often conceptualized 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). Similarly, *role theory* highlights the importance of the work role for the individual, and implies particular losses for those with greater work centrality, which means those who had a stronger commitment to the work role (Kim & Moen, 2001; Ryser & Wernli, 2016; Taylor-Carter & Cook, 1995).

Continuity theory (Atchley, 1971; 1989), on the other hand, implies that retirement should not affect psychological health significantly, because identity and meaningful roles can not only be found in one's work life, but also in non-work related experiences in 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). To understand intra-individual development over time, Atchley (1976) proposed a "*stage-model*" (van Solinge, 2012) of retirement adaptation: After an initial "honeymoon" (i.e. a positive period directly after retirement) through a relief from a stressful work life, a drop in psychological health should follow in a phase of "disenchantment", when the new post-retirement environment challenged the individual. "Adaptation" was expected afterwards, which would lead to relative stability over a longer period, until health problems and other age-related challenges tend to contribute to declines in psychological health in the last phase of life ("termination").

More recent studies are often based on the so-called *life course approach* (Elder, Johnson, & Crosnoe, 2003). The life course approach is mainly focused on institutional and socio-cultural influences on human development, in contrast to the more psychological, individual-centered life span perspective, although the terms are often used interchangeably (Fuller-Iglesias, Smith, & Antonucci, 2009; Mayer, 2002). Elder et al. (2003) named key principles of the life course perspective: First, development occurs over the entire life span, but changes and experiences at a given time point can only be understood by taking earlier experiences, transitions and events into account. How well people adjust to retirement might thus be associated with earlier transitions (Wang et al., 2011). Second, people construct their own lives within given constraints by and in interaction with culture, institutions and structures ("agency", Elder et

al., 2003; Mayer, 2009). Third, the individual life course is contextually embedded in a specific historical time and specific societal circumstances. Fourth, apart from historical time, individual timing of events is important to understand antecedents and consequences for the individual (Kim & Moen, 2001; Elder et al., 2003). Fifth, individual lives are linked to others (e.g. within couples, or families).

Important implications from life course theory for retirement research included the importance of non-work life spheres as the family situation and the partner's retirement process (Damman, Segel-Karpas, & Henkens, 2018; Kim & Moen, 2002; Szinovacz & Davey, 2004), as well as the role of individual agency (Kim & Moen, 2002), and the individual retirement timing (Kim & Moen, 2001). Furthermore, the life course approach reminds researchers to distinguish between transitions between life phases (e.g. retirement transition) and trajectories (changes within a life phase, e.g. life in retirement, Wang, 2007).

The *resource-based dynamic perspective* on retirement adjustment, which was developed more recently, is meant to reconcile different theoretical approaches (Wang, 2007; Wang et al., 2011). Within this framework, adjustment at a given time point in the retirement process is viewed as 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). Hence, the effect of retirement depends on pre-retirement individual resources and resource changes. Changes in psychological health should be a result of changes in resources across the retirement transition. If retirement is associated with a loss in resources, for example in income (Segel-Karpas et al., 2013), or perceived control (Kim & Moen, 2002), the individual psychological health will decrease as well. In case retirement is accompanied by gains in resources, psychological health is likely to increase. Stable pre-retirement resources (e.g. social support, health) might also work as a buffer against challenges in the post-retirement environment and secure the access to other important resources over time, which in turn lead to maintained need satisfaction (Wang et al., 2011). Hypotheses for the identification of factors that predict stability or change in access to resources can be found in other theories. For example, role theory would predict that stronger work role attachment before retirement could be related to a loss of identity, and thus also to losses in well-being.

The advantage of the resource approach is its integrative value and its applicability for multidisciplinary research. Researchers from different disciplines can agree on the overall principles and apply their respective theories and knowledge to improve the field (Wang et al., 2011). The approach also highlights interindividual differences and intra-individual changes in adjustment.

A disadvantage is the vague conceptualization of some important aspects of the model. First, the concept of resources is not clearly explained, and this affects the possibility to derive hypotheses from the resource-based dynamic perspective alone. There is no hierarchy of resources included in the model, thus it remains unclear which losses or gains are most important, or if the importance differs between individuals. In addition, different resources are likely to interact (Hansson, Buratti, Johansson, & Berg, 2018), but an interaction is not specifically considered in the model either. Finally, potential interindividual differences in the sensitivity to resource changes are not considered.

Second, the concept of needs is ill-defined as well. It remains unclear which important needs are to be satisfied, if the needs are universal or if they differ between individuals, or within individuals over time. The distinction between resources and needs is also problematic, especially with regard to psychological resources and needs. Autonomy for example could be seen as a basic psychological need (e.g. Ryan & Deci, 2017, or study III in the present thesis), or a motivational resource (e.g. Hansson, Buratti, Thorvaldsson, Johansson, & Berg, 2017). Nevertheless, the resource approach is a first step towards a more holistic and interdisciplinary view of the retirement transition.

The current thesis is not solely based on only one of the above approaches. Instead, our research is informed by different psychological theories from life span, work and organizational, motivational, as well as personality psychology, which were applied to specific facets of the retirement adjustment process.

1.3 Previous Empirical Findings

In a literature review, we found that most available studies in fact show relative stability in psychological health across retirement (Henning, Lindwall, & Johansson, 2016).

Retirement seems to affect psychological health to a smaller degree than other life events such as widowhood or childbirth (Luhmann, Hofmann, Eid, & Lucas, 2012). However, short-term reactions and long-term adaptation were seldom disentangled in previous studies. Most research either was based on only few assessments or did not consider long-term within-person changes (e.g. Hershey & Henkens, 2014; Nuttman-Shwartz, 2004). Nevertheless, studies based on the German Socioeconomic Panel Study (Siedler, Schupp, Spiess, & Wagner, 2009) demonstrated increases in psychological health directly after retirement and long-term decreases later on (Merz, 2018; Pinquart & Schindler, 2007; Wetzel, Huxhold, & Tesch-Römer, 2016).

As expected, previous studies showed a large heterogeneity in retirement adjustment (Heybroek, Barnes, & Baxter, 2015; Kim & Moen, 2001; 2002; Pinquart & Schindler, 2007; Wang et al., 2011). A specific life event does not have the same (negative or positive) effect on everyone (Dohrenwend, 2006). Consequently, people differ in the way they react and adapt to retirement as well. Studies using growth mixture modeling showed stability or even gains in psychological health for the great majority of retirees, but certain subgroups experience losses (Heybroek et al., 2015; Pinquart & Schindler, 2007; Wang, 2007). This makes it imperative to identify the characteristics producing these differing outcomes in the retirement transition.

Potential predictors of retirement adjustment are, however, numerous and may operate on several levels (Henning et al., 2016; Martins Barbosa, Monteiro, & Giardini Murta, 2016). These include sociodemographic factors such as gender (Dave, Rashad, & Spasojevic, 2008; Pinquart & Schindler, 2007; Wang, 2007), marital status (Wang, 2007) and education (Clark & Fawaz, 2009), with better adjustment among men, married and highly educated individuals. These effects most likely relate to differential access to important resources (Wang, 2007). The context of retirement matters as well: People who were forced to retire (Hershey & Henkens, 2014), or retired before the usual time norms (Calvo, Sarkisian, & Tamborini, 2013), are more likely to experience losses in psychological health.

In line with role theory, pre-retirement work life seems to be important as well, because those who were unemployed before retirement (Wetzel, Huxhold, & Tesch-Römer, 2015) or reported lower work satisfaction or attachment to the work place, seem to experience specific gains across the transition (Ku-

bicek, Korunka, Raymo, & Hoonacker, 2011; Wang, 2007). Confirming expectations from life course research, the individual transition is linked to one's private life: Marital problems affect adjustment negatively (Wang, 2007), and a retired partner or a joint retirement seems to ease the transition (Szinovasz & Davey, 2004). Finally, psychosocial factors such as high social support and self-esteem (Hansson et al., 2017), adaptive coping strategies (Kubicek et al., 2011) and feelings of control (Kim & Moen, 2002), as well as post-retirement activities (Dave et al., 2008; Ryser & Wernli, 2016) predict more positive changes in psychological health. Supporting the resource perspective discussed earlier (Wang et al., 2011), losing or gaining physical, financial, social or psychological resources across the transition is associated with decreases respectively increases in psychological health (Kim & Moen, 2002; Segel-Karpas et al., 2013; Wang, 2007; Yeung, 2018; Yeung & Zhou, 2017).

Nevertheless, some important aspects regarding general trends and heterogeneity in change in psychological health remain unclear (Henning et al., 2016). Three aspects are of specific importance for the present thesis: First, our knowledge is still sparse on the differential impact of retirement on different dimensions of psychological health (Wang et al., 2011). According to life span research, development across the life span is multidimensional and multidirectional (Baltes, 1987). Therefore, the effect of retirement on psychological health is likely to depend on the specific measure used. A recent meta-analysis confirmed this notion, demonstrating that different dimensions of subjective well-being do not show the same patterns of change across retirement (Luhmann et al., 2012). Luhmann et al. (2012) conclude that cognitive facets of well-being are more strongly affected by retirement than affective facets, but few studies have so far compared different measures in the same data set.

Second, there is little documented information on the way that people respond to different aspects of retirement, how they use opportunities, confront challenges, outweigh losses and find meaningful post-retirement roles and activities. Kubicek and colleagues (2011) showed that self-reported coping styles before retirement are associated with change in psychological health across the transition, but there is little evidence on the actual adjustment behavior people engage in. For example, working in retirement (Wang, 2007) and engaging in physical activity (Dave et al., 2008) may help people during the transition. However, the association between changes in lifestyle and priorities on the one hand, and changes in psychological health on the other hand, remains unclear. Furthermore, depending on the individual situation, various post-retirement adjustment behaviors might not be equally adaptive.

Third, the role of psychological factors has been neglected in the literature on retirement adjustment for a long time (cf. van Solinge, 2012). More recent studies have analyzed more psychological dimensions (Hansson et al., 2017;

2018; Ryan, Newton, Chauhan, & Chopik, 2017; Serrat, Villar, Pratt, & Stukas, 2017; Yeung, 2018), but they are still underrepresented in research on retirement adjustment.

1.4 Multidimensional Indicators of Retirement Adjustment

In the papers included in this thesis, we focused on different facets of psychological health, to develop a more comprehensive and nuanced view on development across retirement: life satisfaction, depressive symptoms, and basic psychological need satisfaction. Studies I and III included life satisfaction, study IV depressive symptoms, and studies II and III basic psychological need satisfaction.

1.4.1 Life satisfaction

Life satisfaction represents the cognitive-evaluative facet of “subjective well-being” (Diener, Suh, Lucas, & Smith, 1999; Luhmann et al., 2012). The model of subjective well-being further includes domain-specific life satisfaction, as well as an emotional component, mostly positive and negative affect (Diener, 1984; Luhmann et al., 2012).

Life satisfaction is relatively stable over the life span, is even found to be heritable, and partly viewed as a personality-dependent trait (McAdams, Lucas, & Donnellan, 2012; Baird, Lucas, Donnellan, & Brent, 2009; Eid & Diener, 2004). Some studies found declines in young adulthood, stability later on and increases after mid-life (McAdams et al., 2012; Baird et al., 2009; Cheng, Powdthavee, & Oswald, 2015). Up to very-old age, there is often a relative stability in levels of life satisfaction (Gana, Bailly, Saada, Joulain, & Alaphilippe, 2013; Schilling, 2006). This has been seen as a paradox given age-related health declines and many other challenges accompanying older age. These results are often explained with various adaptation strategies that older adults engage in (Baltes & Baltes, 1990) and with improved emotion regulation (Bjälkebring, Västfjäll, & Johansson, 2013). Nevertheless, distinct declines in life satisfaction set in in the last years of life (Berg, Hassing, Thorvaldsson, & Johansson, 2011; Gerstorf et al., 2008; 2010). Earlier so-called “set point” theories (Hülür & Gerstorf, 2018) often implied that life events could not have a lasting impact on well-being and life satisfaction (Brickman & Campbell, 1971): People were assumed to have an individual set point of well-being, to which they tend to return after positive or negative life events. However, more recent empirical findings showed both short-term and long lasting effects of life events on life satisfaction (Anusic, Yap, & Lucas, 2012; Lucas, 2005; 2007; Lucas, Clark, Georgellis & Diener, 2004; Yap, Anusic, & Lucas, 2012). Furthermore, studies show considerable individual differences in the reaction to a life event, as well as in the long time adaptation (Diener, Lucas, & Scollon, 2006; Diener et al., 1999; Yap et al., 2014).

Previous studies found mostly stability in life satisfaction in the retirement transition (Henning et al., 2016; Luhmann et al., 2012), although there might be small short-term increases in life satisfaction directly after retirement (Pinquart & Schindler, 2007; Wetzel et al., 2016). However, the effect of retirement on life satisfaction varies between studies and there are large interindividual differences (Henning et al., 2016; Pinquart & Schindler, 2007).

1.4.2 Depressive symptoms

Depressive symptoms were included as a dimensional construct, not as a diagnostic category. We measured the individual level of depressive symptoms, instead of simply categorizing people as either being depressed or not. Many authors see depressive symptoms as a measure of subjective well-being (Luhmann et al., 2012). Nevertheless, given that depression scales such as the popular CES-D (Radloff, 1977) also include symptoms such as sleep problems (“my sleep was restless”), reduced appetite (“I did not feel like eating; my appetite was poor”) or reduced motivation (“I could not get going”), depressive symptoms constitute a distinct concept.

Sutin et al. (2013) found support for a U – shaped trajectory of depressive symptoms over the life span, with decreases from young to mid-adulthood and stability in midlife, but increases in old age. Earlier cross-sectional studies showed comparable results (Gatz, Johansson, Pedersen, Berg, & Reynolds, 1993; Kessler, Foster, Webster, & House, 1992). Nevertheless, the life span development of depressive symptoms is less well understood than change in life satisfaction (Schilling, Wahl, & Reidick, 2013; Wettstein, Schilling, Reidick, & Wahl, 2015). There is striking evidence for distinct increases in depressive symptoms towards the end of life (Chui, Gerstorf, Hoppmann, & Luszcz, 2015; Diegelmann, Schilling, & Wahl, 2016; Schilling et al., 2013).

After important life events, depressive symptoms show changes similar to life satisfaction (but in the opposite direction). Nevertheless, for some life events, remarkable differences in reaction and adaptation exist between these two dimensions (Luhmann et al., 2012). Depressive symptoms across the retirement transition have been investigated in many studies (e.g. Kubicek et al., 2011; Lindwall et al., 2017; Peristera, Platts, Magnusson Hansson, & Westerlund, 2018). Luhmann et al. (2012) concluded that the affective well-being components (including depressive symptoms) are less likely to change than life satisfaction.

1.4.3 Basic psychological need satisfaction

Basic Psychological Needs Theory (BPNT), which is part of the research framework Self-Determination Theory (SDT, Ryan & Deci, 2017), suggests that individual well-being and mental health depend on the satisfaction of the central, innate psychological needs for autonomy, competence and relatedness. According to BPNT advocates, there is no empirical evidence for the presence of further basic needs (Ryan & Deci, 2017).

Satisfaction of these needs is comparable to the supply of specific physical nutrients to the body; just as humans need these nutrients to stay healthy, they need to feel autonomy, competence and relatedness to be happy (Deci & Ryan, 2000). The need for autonomy is satisfied if people are able to act according to their own plans and interests, and experience themselves as the main driver of their own actions (de Charms, 1968). The concept of autonomy is not equivalent to independence in this model, but rather related to feelings of internal control and volition (Ryan & Deci, 2017). The need for competence is satisfied if people feel that they are effective in what they do (cf. White, 1959). The need for relatedness is satisfied if people feel involved with their loved ones and experience satisfying relationships (Baumeister & Leary, 1995; Ryan & Deci, 2017).

In support of the basic psychological need theory, numerous studies have shown strong associations between need satisfaction and psychological health (Chen et al., 2015; Neubauer, Lerche & Voss, 2018; Neubauer & Voss, 2018; Ng et al., 2012, Reis, Sheldon, Roscoe, & Ryan, 2000; Sheldon, Ryan, & Reis, 1996; Weinstein, Khabbaz, & Legate, 2016). Higher basic psychological need satisfaction is associated with higher well-being and better psychological health in various cultures (Chen et al., 2015; Ng et al., 2012) and different life stages (Mackenzie, Karaoylas, & Starzyk, 2018). A more recent paper also showed that basic psychological need satisfaction contributes to life satisfaction in retirement (Houliort et al., 2015).

There is little knowledge on how need satisfaction develops across the life span. Furthermore, to my knowledge, no study has investigated change in the satisfaction of all three basic psychological needs across the retirement transition. In a recent paper we found increases in autonomy after retirement (Lindwall et al., 2017), but little is known about relatedness or competence. Measuring need satisfaction as an indicator of retirement adjustment has an important advantage compared to more global measures: Retirement most likely comes with gains and losses in resources (Wang et al., 2011), and those might correspond also to losses in need satisfaction with regard to some needs, but gains with regard to others. These changes in psychological health might stay

unobserved when focusing solely on more broad outcomes, such as life satisfaction and depressive symptoms.

1.5 Assimilative and Accommodative Adjustment to Retirement

Although many external factors (e.g. company policy, care obligations) determine the factual retirement process and the demands for adjustment, adjustment to retirement should be seen as an active process. Unfortunately, few studies have focused on the individual as an active force in the retirement process (Wang et al., 2011).

Theories from life span psychology can help to understand retirement adjustment behavior (Löckenhoff, 2012). For example, the two-process model of coping describes two ways to respond to a mismatch between desired circumstances and actual environmental challenges (Brandstädter & Renner, 1990): First, people can try to alter the environment according to their own goals and ideals (assimilation). Second, they can flexibly adjust their goals to the given circumstances (accommodation). These strategies (or modes) complement each other and help coping with age-related challenges (Brandstädter, 2009; Brandstädter & Renner, 1990; Brandstädter & Rothermund, 2002). In the context of retirement, Hesketh, Griffin, and Loh (2011) called the two strategies proactive and reactive retirement adjustment. Kubicek et al. (2011) found that both self-reported tenacious goal pursuit (assimilation) and flexible goal adjustment (accommodation) before retirement were associated with subsequent gains in psychological health.

There is little research on assimilative or accommodative adjustment in relation to retirement. Van Solinge and Henkens (2008) argued that the main tasks in this adjustment process are to cope with losses associated with the work role and to develop a satisfactory lifestyle. These goals can be achieved by different means, which emphasizes the need to consider active coping processes in retirement adjustment.

1.5.1 Working in retirement

Apart from its obvious effect on income, work can provide people with identity, structure, social stimulation, collective purpose, and activity (Jahoda, 1981; Paul & Batinic, 2010). Furthermore, Wetzel and Mahne (2016) showed that people perceive increased social exclusion after retiring from work.

Post-retirement work can be a way to achieve continuity after retirement (Kim & Feldmann, 2000). This can be seen as assimilative coping (Hesketh et al., 2011), as the post-retirement environment is formed to satisfy the retiree's needs. The Swedish pension system allows taking out pension while continuing to work in a part-time pension scheme and the number of working retirees is increasing, in Sweden as well as in many other countries (Wadensjö, 2006;

Sjögren Lindquist & Wadensjö, 2009). Partial retirement can in this respect offer an opportunity to ease adjustment while at the same time experiencing benefits from work life. Working in retirement has also been associated with higher well-being (Kim & Feldman, 2000; Lux & Scherger, 2017).

Nevertheless, it is unclear if it also eases the transition itself. Wang (2007) found some support for this assumption, but Hansson et al. (2017) found those working in retirement experienced stability whereas increases in life satisfaction were only detected among full-time retirees. The adaptive value of work after retirement most likely depends on a number of factors, including conditions in the individual job. Notably, selection effects need to be considered as the likelihood of work after retirement is not equally distributed across society (Platts et al., 2019) and probably depends on sociodemographic, health, and personality characteristics, besides profession and more general work requirements.

Given these complex patterns, the specific effects of work in retirement on psychological health are not well understood (Dingemans & Henkens, 2019).

1.5.2 Leisure activity

Engagement in leisure activities represents another aspect of assimilative adjustment. A greater leisure activity engagement in older age is found to be associated with better psychological health (Chang, Wray, Lin, 2014; Silverstein & Parker, 2002), physical health (Everard, Lach, Fisher, & Baum, 2000; Menec, 2003) and cognitive health (Bielak, Gerstorf, Anstey, & Luszcz, 2014; Gow, Mortensen & Avlund, 2012; Köhncke et al., 2018).

Leisure activity might play a particularly important role in the retirement transition: Atchley (1971) argued that important and valued aspects of work life could be replaced by leisure activities to ensure overall continuity. Researchers favoring role theory also highlighted the importance of non-work roles for successful adjustment to the loss of the work role (Ryser & Wernli, 2016). In addition, leisure activity can for example provide intellectual stimulation to prevent mental underload (Andel et al., 2016) as well as social support (Coleman & Iso-Ahola, 1992) and physical activity, which help coping with stressful life events (Harris, Cronkite, & Moos, 2006; Heaney, Carroll, & Phillips, 2014).

It is not common to start new activities in older age. People rather stick to previous activities, which they have acquainted over their life course, until worsening health status and resource losses force them to reduce their activity (Agahi, Ahacic & Parker, 2006; Janke, Davey & Kleiber, 2006; Wetzel & Huxhold, 2016). Nevertheless, retirement offers increased free time and thus an opportunity for increased leisure participation.

Surprisingly few studies have systematically investigated change in leisure activity across retirement. There is a lack of true longitudinal studies, analyzing within-person change in activity level. Most studies conducted are retrospective reports of changes, or include only one wave before and one wave after retirement. The results are mixed and they allow no firm conclusions about the nature of changes in leisure activity engagement after retirement (Earl, Gersans, & Halim, 2015; Janke et al., 2006; Long, 1987; Nimrod, 2007; Nimrod, Janke & Kleiber, 2008; Rosenkoetter, Gams, & Engdahl, 2001; Scherger, Nazroo, & Higgs, 2011). Few studies have disentangled number of activities and activity level (Long, 1987). It is further unclear which specific activities are likely to be started or given up after retirement (Earl et al., 2015; Scherger et al., 2011; Sprod et al. 2017). Physical leisure activity seems to increase across the transition, but mostly for those with higher socioeconomic status (Barnett, van Sluijs, & Ogilvie, 2012). Interindividual differences in change have rarely been addressed.

Furthermore, there are only few empirical studies on potential consequences of leisure activity engagement in the retirement transition for psychological health. Higher activity after retirement was related to higher well-being in cross-sectional studies (Earl et al., 2015; Nimrod, 2007), and it might moderate the effect of retirement on well-being and mental health (Dave et al., 2008; Nimrod et al., 2008; Ryser & Wernli, 2016). Nevertheless, no study has yet disentangled the role of pre-retirement activity level and changes across the transition for changes in psychological health across retirement.

In sum, although previous studies offer some first evidence about the role of leisure activity in retirement adjustment, many questions remain unanswered and there is no clear picture of how leisure activity develops across retirement. In addition, very little is known about the nature of changes in leisure activity engagement, predictors of changes, and the actual value of becoming or staying active for retirement adjustment.

1.5.3 Reprioritization

There are also more accommodative routes to adjust to a changing environment and the life situation as retiree. If certain needs are not as easily satisfied in retirement, it might be adaptive to change one's standards, or to reprioritize (cf. Neubauer, Schilling, & Wahl, 2017). Retirement might lead to a reprioritization in favor of some reachable goals over other less reachable goals (Baltes & Rudolph, 2012).

The literature on goal engagement and disengagement over the life span shows that such processes can be adaptive (Wrosch, Amir, & Miller, 2011; Wrosch, Scheier, Miller, Schulz, & Carver, 2003). Comparable processes are

observed after serious health events. Following such events, mental health tends to become a better predictor of overall self-rated health or health-related quality of life, compared to more objective health indicators. This is interpreted as an adaptive reprioritization, which allows for a continuity of previous self-rated health and quality of life (Barclay & Tate, 2014; Spuling, Wolff & Wurm, 2017). Such response shifts seem to permit relative stability in self-rated health in later life despite objective health declines (Spuling, Wurm, Tesch-Römer, & Huxhold, 2015).

Although there is evidence supporting the existence of such adjustment processes, it remains unclear on which level they actually operate. As mentioned, well-being and psychological health seem to depend on the satisfaction of psychological needs (Ryan & Deci, 2017; Wang et al., 2011). Ryan and La Guardia (2000) argued that although older adults would need to adapt to age-related challenges by finding need satisfaction from other sources than before, their psychological health and well-being depended on the satisfaction of the same needs as in earlier life stages. On the other hand, Neubauer et al. (2017) found that autonomy did not predict well-being close to the end of life. They explained this finding in line with the motivational theory of life span development (Heckhausen & Schulz, 1995; Heckhausen, Wrosch, & Schulz, 2010). Although there are conceptual differences between both models (Poulin, Haase, & Heckhausen, 2005), this model is similar to the two-process model of coping (Brandstädter & Renner, 1990) concerning the adaptiveness of disengaging from goals that are not reachable anymore. Neubauer et al. (2017) argued that because autonomy becomes hard to achieve in the last years of life, people could have abandoned the quest for autonomy and instead focused on other, more valued needs such as the need for competence.

Following Neubauer et al. (2017) in their approach to need satisfaction, and assuming that the retirement event comes with specific challenges, we can expect that the association between need satisfaction and psychological health changes across the retirement transition. It is also possible to develop expectations for the direction of change for the different needs: Competence might be harder to achieve in a world without work – people have often specialized in certain work tasks over several decades and most likely gain much of their overall feelings of competence from performing well at their job. Once they are retired, they need to find new sources of competence. It might thus be adaptive partly to withdraw from the goal to perceive competence, at least in the first retirement period. Hence, retirees might display weaker associations between competence and well-being after retirement than before. Instead, they could start to base well-being more strongly on the needs for autonomy and relatedness.

It might be adaptive to focus on autonomy as it is a need that can more easily be satisfied in a post-retirement life without work restricting one's private time, given that autonomy need satisfaction increases after retirement (Lindwall et al., 2017). People might also focus more on relatedness, as they potentially have more time with their family and friends after retirement. Thus, it is assumable that retirement goes hand in hand with a stronger association of autonomy and well-being as well as relatedness and well-being, reflecting adaptive reprioritization.

There are other reasons to expect changing associations after retirement as well. First, individual and societal expectations in a life phase might also influence people's standards and priorities. People most likely expect to be able to follow their own plans after retirement, and have more time with their loved ones. Hence, they might see autonomy and relatedness as more important, which would imply stronger associations with well-being. Second, the satisfaction of needs seems to have a stronger effect on well-being for those who experience satisfaction of this need more frequently (Moller, Deci, & Elliot, 2010; Reis et al., 2000), and given that autonomy satisfaction increases after retirement (Lindwall et al., 2017), it may have a stronger effect on well-being after retirement. Finally, socioemotional selectivity theory (Carstensen, 2006) implies that aging experiences trigger an increased need and search for emotional closeness. Retirement reflects a unique aging experience, as entering retirement is seen as entering old age (Ekerdt, 2010). Based on socioemotional selectivity theory, we can assume an increased need for relatedness, which might also lead to a stronger association between relatedness and well-being.

1.6 Personality and Retirement Adjustment

Across the entire life span, personality is one of the most consistent predictors of psychological health (Diener et al., 1999), even in the oldest old (Berg, et al., 2011). Furthermore, personality moderates the impact of life events on psychological health, 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) presented a conceptual model to understand the effect of personality on retirement adjustment. They built on the most prominent model of personality in psychological science, the Big Five personality trait model (e.g. Goldberg, 1993), including the dimensions of neuroticism, extraversion, openness for new experiences, agreeableness, and conscientiousness. These broad dimensions consist of numerous specific facets. Neuroticism is defined as emotional instability and negative emotionality (John, Naumann, & Soto, 2008; John & Srivastava, 1999). High extraversion is present if a person is energetic, sociable and outgoing. Openness to new experience is related to creativity, curiosity and an interest in artistic, intellectual and abstract topics. Agreeableness relates to the tendency to be sympathetic, kind and appreciative. Conscientiousness includes the tendency to be orderly and responsible.

According to Reis and Pushkar Gold's (1993) model, personality might influence retirement adjustment via two different potential pathways. First, it may influence retirees' pre-retirement resources and the context of the transition. For example, neurotic retirees should be less prepared and have less social support, and high extraversion would be associated with receiving greater social support (Reis & Pushkar Gold, 1993). Conscientious retirees should be healthier and better prepared (Reis & Pushkar Gold, 1993). Robinson, Demetre, and Corney (2010) found that highly neurotic retirees were more likely to report negative reasons for retirement, whereas conscientiousness and openness correlated positively with aspirational motives for retirement. Furthermore, personality has been related to self-rated health around retirement age (Duberstein et al., 2003), lifetime 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) assumed that highly neurotic retirees would view retirement more negatively and 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 neu-

rotic 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 are predicted to establish new friendships in retirement as well. Reis and Pushkar Gold (1993) related conscientiousness to better coping strategies and openness to an easier access to meaningful activities.

Noteworthy, few researchers have investigated the influence of personality on retirement adjustment. In line with Reis and Pushkar Gold's (1993) model, high extraversion and low neuroticism have been related to increases in well-being across the retirement transition (Ryan et al., 2017; Serrat et al., 2017) and to a higher retirement satisfaction (Löckenhoff, Terracciano, & Costa, 2009). Also in line with said model, Ryan et al. (2017) found that higher levels of openness were related to increases in well-being across retirement. Kesavayuth, Rosenman and Zikos (2016) found the same for women, but not for men. Robinson et al. (2010) found that high agreeableness, high conscientiousness and low neuroticism were related to higher well-being and positive experiences in retirement. Surprisingly, Kesavayuth et al. (2016) also found a negative effect of pre-retirement conscientiousness for women, which is not explained any further in the paper. However, similar results have been presented with respect to the role of conscientiousness for the reaction to unemployment (Boyce et al., 2010). In the latter study, the authors argued that highly conscientious individuals may experience a particular bond to the work role and a strong need for success. Losing the work role and work-related success would thus have a stronger impact on conscientious individuals. This is also a potential explanation for the findings of Kesavayuth et al. (2016): In their sample, conscientious retirees may have had problems giving up their work role and their work-related structure.

These findings indicate that all Big Five personality dimensions might play a role in retirement adjustment. However, all studies were based on US (Löckenhoff et al., 2009; Ryan et al., 2017; Serrat et al., 2017) or UK data (Kesavayuth et al., 2016; Robinson et al., 2010). Thus, it is unclear whether the findings replicate in other countries. Furthermore, two of them were cross-sectional (Löckenhoff et al., 2009; Robinson et al., 2010). In addition, Serrat et al. (2017) and Ryan et al. (2017) have only included retiring individuals in their samples, so it remains unclear if the observed effects of personality are specific to the retirement transition.

Moreover, instead of just investigating main effects of personality traits, researchers have also focused on the interaction among traits to provide a more nuanced view on the role of personality in the adjustment to life events (Bardi & Ryff, 2007). 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, besides being problematic to interpret 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, etc.). 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. Therefore, researchers following this approach mostly compare groups of people with similar patterns of covariation among important constructs. For example, 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., 2006, p.658).

According to the person-oriented framework, the focus should be on the individual personality profile arising from the interaction among traits, not on scores on a single trait. Individuals are characterized by a unique combination of traits, and these might have unique effects. In the person-oriented research tradition, personality types refer 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). This does not mean that there are only few types and all people can be sorted into these types. However, by identifying specific profiles in a bottom-up approach, personality types provide a way to visualize and interpret the typical covariation that is found between traits. Most papers are based on cluster analysis or latent profile analysis (Specht, Luhmann, & Geiser, 2014). In contrast to factor analysis, the focus is not on variables, but on sample characteristics, with the aim to identify underlying profiles instead of finding underlying higher order constructs above the distinctive variables.

Recent studies using personality profiles have for example shown interesting effects with regard to psychological health (Merz & Roesch, 2011) and successful ageing (Steca, Allessandrini, & Caprara, 2010). Many studies find three groups (Donnellan & Robins, 2010; Specht et al., 2014; Steca et al.,

2010): “resilients”, “undercontrollers”, and “overcontrollers”. However, the exact group characteristics may 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, John, Caspi, Moffitt, & Stouthamer-Loeber, 1996; Specht et al., 2014). Resilients show most favorable outcomes in many studies, whereas overcontrollers and undercontrollers exhibit differential but more negative characteristics (e.g. Steca, et al., 2010).

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

1.7 Work Motivation and Retirement Adjustment

Researchers have argued that the retirement transition is partly a role transition, and giving up the work role can be stressful for the individual, especially if they felt a close connection to their job (Taylor-Carter & Cook, 1995). The resource based dynamic approach (Wang et al., 2011) suggests that retirement is associated with resource gains (e.g. free time, stress release, etc.) for those who did not like their job, but resource losses (e.g. status, social contacts etc.) for those who did.

Although cross-sectional results are mixed (Quick & Moen, 1998; Topa & Alcover, 2015; Wong & Earl, 2009), longitudinal studies support these propositions. A lower personal importance of the job (Kubicek et al., 2011), respectively low work satisfaction (Kubicek et al., 2011; Ryser & Wernli, 2017; Wang, 2007) is associated with increases in psychological health during the retirement transition. Nevertheless, researchers have commonly relied on relatively global measures such as work satisfaction, which do not consider the individual motivational background and reasons for work engagement. Wöhrmann, Fasbender, and Deller (2014) for example showed that individual work values are associated with post-retirement work intentions, but results differed depending on the type of work value. Hence, more nuanced measures may also help to understand retirement adjustment better.

Research on multi-dimensional work motivation within Self-Determination Theory (Gagné, 2014; Gagné & Deci, 2005) offers such measures with a solid theoretical base. This approach builds on an unspecific model of motivation (Ryan & Deci, 2006), which can be applied to work motivation. The core assumption is that not only quantity, but also quality of motivation influences work adjustment, performance and worker's well-being. Researchers broadly differentiate between autonomous motivation, controlled motivation, and amotivation. Autonomous work motivation is present if the work task is performed with a "full sense of willingness, volition, and choice" (Deci, Olafsen, & Ryan, 2017, p. 20). Controlled motivation is present if external forces (e.g. family expectations, salary) influence the work engagement. Workers often experience both autonomous and controlled motivation for their job (Van den Broeck, Lens, de Witte, & Van Coillie, 2013). Amotivation refers to a state in which the worker sees no sense in work engagement, and is thus not the same as low autonomous or controlled motivation.

Research shows that people with high autonomous work motivation report better well-being, higher work satisfaction, and a strong but healthy work engagement (Richer, Blanchard, & Vallerand, 2002; Van Beek, Taris, & Schaufeli, 2011). Higher controlled motivation is associated with workaholism (Van

Beek et al., 2011), burnout (Van den Broeck et al., 2013), and turnover intentions (Gillet, Gagné, Sauvagère, & Fouquereau, 2013). Amotivation is associated with turnover intentions, higher distress and worse mental health (Gagné et al., 2015; Nie, Chua, Yeung, Ryan, & Chan, 2015; Ryan, Deci, & Grolnick, 1995).

Most studies include only the higher order factors of autonomous and controlled motivation. Other studies are based on more fine-grained levels of regulation with increasing levels of autonomy (Howard et al., 2017). Controlled motivation is divided into external and introjected regulation. External regulation refers to actions regulated purely by external forces such as rewards (e.g. salary, praise) or punishment (e.g. disappointment by the family). Introjected regulation means that a person gains self-esteem from the job, or feels guilty or ashamed with a bad performance.

Sub-dimensions of autonomous motivation include identified regulation and intrinsic motivation. Identified regulation means that the person acknowledges and identifies with the general goals behind the activities. Nevertheless, the engagement is present because it is worth reaching a goal, not because of the task itself. Intrinsic motivation is present if the activity itself is perceived as attractive enough and engaging. The original model also included a further dimension, integrated regulation, but this dimension has been abandoned in recent papers given that it is hard to distinguish from identified and intrinsic motivation with no additional effects on important outcomes and a lack of face validity (Gagné et al., 2015; Howard et al., 2017). Figure 1 gives an overview on the different facets of motivation.

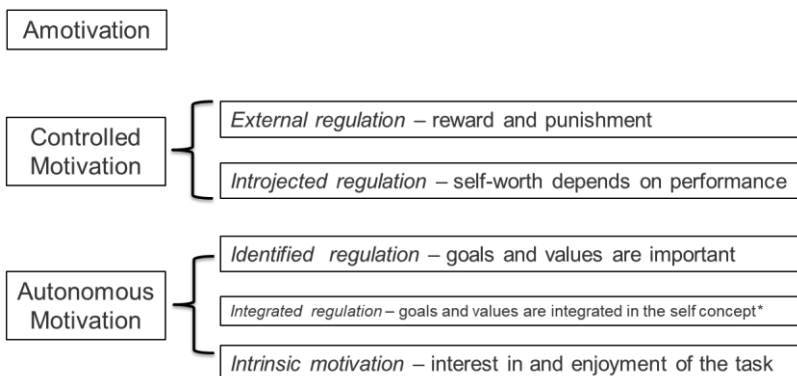


Figure 1. Sub-dimensions of work motivation.

Note. Modified from M. Gagné & E.L. Ryan, 2005. *Integrated regulation was included in earlier conceptualizations of the model, but has been abandoned in more recent work.

Although a lot of research supports the association of multidimensional work motivation with various work-related outcomes and well-being, most articles concern young or middle-aged workers. The association of work motivation and retirement adjustment has not been at focus in previous studies.

From research on retirement adjustment (Wang, 2007), we can expect that those with higher autonomous work motivation have more to lose when giving up work. Higher pre-retirement autonomous work motivation may be associated with more losses across retirement, adjustment problems, and hence decreases, or weaker increases in psychological health during the transition. On the contrary, higher amotivation may be related to increases in psychological health in retirement, as people get free from their unloved routines. Controlled motivation most likely comes with benefits and disadvantages and should thus have no strong overall association with changes in psychological health across retirement.

The aforementioned effects may depend on the specific type of transition. If retirees continue working in retirement, the negative association between autonomous work motivation and retirement adjustment, as well as the positive association between amotivation and retirement adjustment could be weaker or even reversed. People with high autonomous motivation could still benefit from their positive work environment in retirement, and people with high amotivation would still suffer negative consequences.

1.8 Preliminary Summary and Aims

The literature outlined above provides evidence for a substantial heterogeneity in psychological health across retirement. Many theories (e.g. role theory, life course approach, etc.) have been applied to better understand the differential effects of retirement (Wang, 2007). The recently introduced resource-based dynamic perspective on retirement adjustment (Wang et al., 2011) represents a first step towards an interdisciplinary research framework for studies on the retirement transition. However, there is still a lack of more detailed inquiries into interindividual differences in change in psychological health across retirement. Psychological factors are largely neglected and little is still known about accommodative and assimilative adjustment in the retirement transition. The four empirical studies presented in the current thesis were conducted to fill some of the previously described research gaps.

The overall aim of the thesis is to provide a more detailed account of interindividual differences in change in psychological health across retirement, based on psychological research and theories from lifespan psychology, motivational psychology and personality psychology.

The more specific aims are to consider different aspects of psychological health, namely life satisfaction, basic psychological need satisfaction, and depressive symptoms (studies I-IV), investigate psychological predictors of retirement adjustment (study I: personality; study II: work motivation), and to include potential adaptive strategies for post-retirement adjustment, which have previously been overlooked in retirement research (study III + IV). The current thesis also provides information on potential risk factors and resources for a positive retirement transition. The specific aims and research questions in the four studies are further outlined in Chapter 2.

Chapter 2

Chapter 2

Summary of the Studies

2.1 Study I

2.1.1 Aims

The aim in study I was to investigate the role of personality for retirement adjustment, applying both variable-centered and person-centered approaches to personality. Retirement adjustment was operationalized as change in life satisfaction. Study I had three main research questions.

Research question 1 was if retirement has an effect on change in life satisfaction in a Swedish sample of older adults. We investigated if retiring participants differed in change in life satisfaction from constantly not-retired participants.

Research question 2 was if a latent profile analysis on the Big Five personality traits results in meaningful subgroups with distinct profiles of personality.

Research question 3 was if personality moderates the effect of retirement on change in life satisfaction. More specifically, we wanted to know if the effect of retirement was different for people with different personality types in our sample, and if the results using type-focused models were more parsimonious than those from trait-focused models.

We did not specify hypotheses.

2.1.2 Method

2.1.2.1 Sample

Study I was based on data from the “Health, Ageing, and Retirement Transitions in Sweden” (HEARTS) study. The HEARTS study is an ongoing longitudinal study with annual measurements. In 2015, 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. The majority of the sample had

not started to take out pensions at baseline, which is possible from age 61 on in Sweden.

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 full overview of the included measures and descriptive statistics for the full sample is given elsewhere (Lindwall et al. 2017). At the first follow-up in 2016, $n = 4,651$ participated again (78.7 %) in wave 2, 4,320 participated 2017 in wave 3 (73.1% of wave 1 participants), and 4,033 participated 2018 in wave 4 (68.21%).

Study I was based on data of the first two waves (2015-2016). We included individuals who were working at the first time point, and had valid personality scores to base personality types on. This adds up to $n = 2,797$ participants in the latent profile analysis. However, in the analysis on change in life satisfaction, only $n = 2,655$ were included due to missing values. Table 1 shows some descriptive statistics of the study sample.

Table 1. Descriptive Statistics Study I

Measure	<i>M (SD)</i>
Age	62.18 (1.72)
Gender	54% female
Education (years)	13.82 (3.59)
Number of diseases (T1)	5.14 (3.67)

$n = 2.759 - 2.797$

2.1.2.2 Measures

Life satisfaction was assessed with the satisfaction with life scale (Diener, Emmons, Larsen, & Griffin, 1984). This scale is based on five items on a 7-point Likert scale. Reliability was $\alpha = .92$ for both time points. We constructed latent factors 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 and Reis and Pushkar Gold’s (1993) model is mainly focused on full-time retirement. In this sample, 268 persons retired between waves.

Personality was assessed using the Mini IPIP (Donnellan, Oswald, Baird, & Lucas, 2006). The scale is a short form of the International Personality Item

Pool (IPIP; Goldberg, 1999) and assesses the Big Five traits with four items per trait on a 5-point Likert scale. All scales were re-coded into z-scores, because this produces scales with the same mean ($= 0$) and standard deviation ($= 1$), 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 with a single 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 a lower job rank.

2.1.2.3 Analysis

To answer our first research question, we inspected baseline differences and change in life satisfaction between the two assessments using a latent change score model (McArdle, 2009) in MPlus 7.4 (Muthén & Muthén, 1998-2015). In this model, life satisfaction at the two time points is modelled as the combination of baseline level and a change score, and both can be predicted separately. Missing values were imputed using full information maximum likelihood estimation (Enders, 2010). Latent factors were constructed from the life satisfaction items. Measurement invariance across time was tested by comparing the fit of different models on CFI, because Chi^2 scores are likely to be distorted by our large sample size (Milfont & 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 predicted by retirement and covariates, without including personality.

To answer our second research question, we conducted a latent profile analysis in MPlus 7.4 (Muthén & Muthén, 1998-2015), identifying specific personality types. In a latent profile analysis, groups with distinct patterns of covariation among variables of interest are derived from the data. Researchers 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, as very small classes (<5%) are believed to show that too many classes have been constructed (Merz & Roesch, 2011).

Finally, group membership in personality types (as dummy variables) was included in further latent change score models as an additional predictor of baseline and change in life satisfaction. 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 the results of person-oriented to variable-oriented analysis.

2.1.3 Results

2.1.3.1 Retirement and life satisfaction

Establishing weak, strong and strict measurement invariance over time in life satisfaction did not result in decreases in model fit, and the final model fit the data very well (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 life satisfaction developed between waves. There was no significant change in life satisfaction between assessments, ($M = 0.02$, $p = .38$), but there was a significant variance in change ($\sigma^2 = 0.75$, $p < .001$). Next, we added retirement status at T2 and covariates to the model, but not personality. Those who retired did not differ from the others in level of baseline life satisfaction ($B = 0.12$, $SE = 0.08$, $p = 0.152$) but they experienced a more positive change in life satisfaction ($B = 0.25$, $SE = 0.06$, $p < .001$). We found evidence for a regression to the mean, because lower life satisfaction was related to higher increases in life satisfaction over time.

2.1.3.2 Personality types

We proceeded by investigating personality types in our data sample. We ran a number of latent profile analyses with an increasing number of groups. Based on the fit indices and group characteristics, we selected a four-type solution for further analysis. BIC and SSA-BIC, as well as the adjusted LMR test were improving with every added type, but models from five types upwards included a very small group. The resulting four groups are illustrated in figure 2 and table 2.

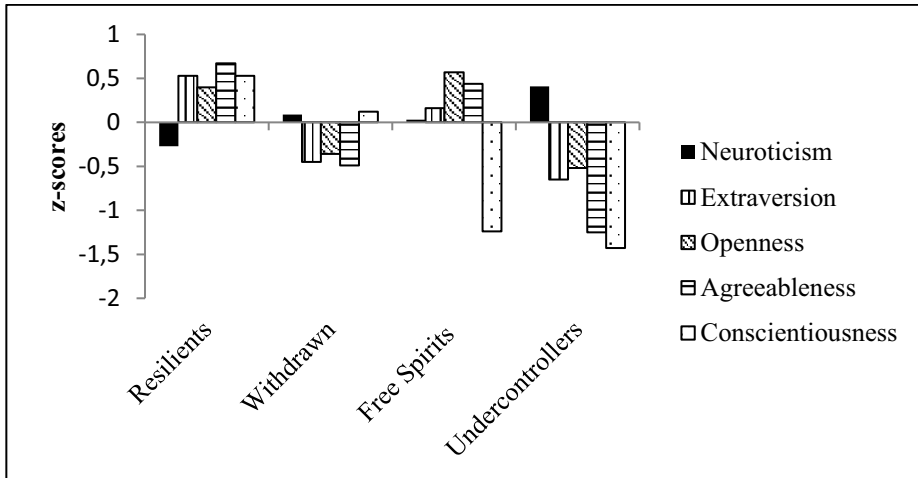


Figure 2. Mean scores on personality traits in the four groups.

We found one large group (40%) with below-average neuroticism, but above-average extraversion, openness, agreeableness and conscientiousness. This group was labelled “resilients”, because it shares characteristics with a same-named group identified in previous studies (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 (13.2%) showed high values in openness, but scored particularly low on 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 2. Personality Types

Measure	Resilients (<i>n</i> = 1,140) <i>M</i> (<i>SE</i>)	Withdrawn (<i>n</i> = 1,067) <i>M</i> (<i>SE</i>)	Free Spirits (<i>n</i> = 389) <i>M</i> (<i>SE</i>)	Under- controllers (<i>n</i> = 201) <i>M</i> (<i>SE</i>)
Neuroticism	-0.27 (0.04)	0.09 (0.04)	0.03 (0.07)	0.41 (0.08)
Extraversion	0.53 (0.07)	-0.45 (0.06)	0.16 (0.08)	-0.65 (0.09)
Openness	0.40 (0.05)	-0.45 (0.05)	0.57 (0.09)	-0.52 (0.08)
Agreeableness	0.67 (0.05)	-0.49 (0.10)	0.44 (0.06)	-1.25 (0.15)
Conscientiousness	0.53 (0.04)	0.12 (0.07)	-1.24 (0.09)	-1.43 (0.16)

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

2.1.3.3 Personality types, retirement and life satisfaction

After identifying the personality types, we included them in the previous model on change in life satisfaction. We found that personality types differed in life satisfaction at baseline: Compared to resilient, all other groups reported lower life satisfaction at baseline (withdrawn: $B = -0.42$, $SE = 0.05$, $p < .001$, free spirits: $B = -0.22$, $SE = 0.07$, $p = .002$, undercontrollers: $B = -0.91$, $SE = 0.09$, $p < .001$). Personality type did not predict change in life satisfaction between waves. The positive effect of retirement on change in life satisfaction was replicated in this model as well.

When adding interaction effects in a second model, we found a large, significant negative “undercontrollers x retirement” - interaction effect ($B = -0.98$, $SE = 0.28$, $p < .001$) on change in life satisfaction. This effect is illustrated in Figure 3: Whereas among the other personality groups, retirement had a positive effect, retiring undercontrollers experienced losses in life satisfaction, whereas their working counterparts experienced relative stability.

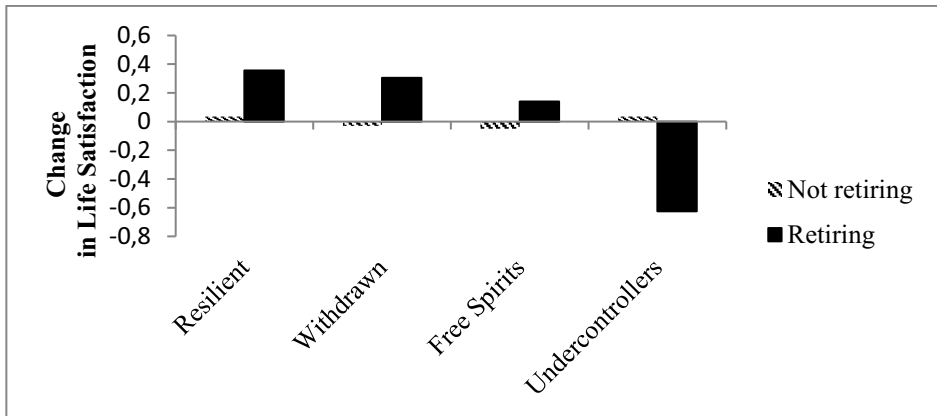


Figure 3. Retirement, personality type and change in life satisfaction

Note: Baseline life satisfaction 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 life satisfaction and all covariates.

2.1.3.4 Personality traits and retirement

As a final step, we repeated the previous two latent change score models with personality traits instead of types to compare results of variable- and person-oriented models. In the model without interaction effects, higher scores in neuroticism were related to lower life satisfaction at baseline ($B = -0.36$, $SE = 0.02$, $p < .001$) and losses in life satisfaction across time ($B = -0.09$, $SE = 0.02$, $p < .001$). Higher extraversion was related to higher baseline life satisfaction ($B = 0.14$, $SE = 0.02$, $p < .001$) and more positive changes over time ($B = 0.05$, $SE = 0.02$, $p = .028$). High scores in openness ($B = 0.05$, $SE = 0.02$, $p = 0.043$) and conscientiousness ($B = 0.12$, $SE = 0.02$, $p < .001$) were related to higher baseline life satisfaction.

In the following model with interaction effects, a positive interaction effect between agreeableness and retirement ($B = 0.18$, $SE = 0.07$, $p = 0.012$) showed that the effect of retirement was more positive for people with high scores in agreeableness.

2.2 Study II

2.2.1 Aims

In study II, we investigated the association of pre-retirement work motivation and retirement adjustment, operationalized as change in basic psychological need satisfaction.

Research question 1 was how basic psychological need satisfaction changes across retirement.

Research question 2 was if multidimensional work motivation before retirement is associated with change in basic psychological need satisfaction.

Research question 3 was if this effect is moderated by post-retirement work status.

Based on theoretical notions from research on multidimensional work motivation and previous knowledge on predictors of retirement adjustment, we formulated the following specific hypotheses:

Hypothesis 1a: Autonomous work motivation (i.e., intrinsic motivation or identified regulation) before retirement is negatively related to increases in need satisfaction across the retirement transition.

Hypothesis 1b: Amotivation before retirement is positively related to increases in need satisfaction across the retirement transition.

Hypothesis 2a: Autonomous motivation (i.e., intrinsic motivation or identified regulation) is more positively related to increases in need satisfaction for those who work in retirement than those who retire fully.

Hypothesis 2b: Amotivation is more negatively related to increases in need satisfaction for those who work in retirement than those who retire fully.

2.2.2 Method

2.2.2.1 Sample

Study II was based on the first two waves of the HEARTS study. We focused on individuals who worked at the first wave and were either full-time retired, or working in retirement at the second. This resulted in $n = 625$ individuals, of which 53 could not be included because of missing values. Hence,

$n = 572$ were part of the main analysis, including 247 full-time retirees and 325 working retirees. Descriptive statistics can be found in table 3.

Table 3. Descriptive Statistics Study II

	Study Sample ($n = 572$)	Full Retirement ($n = 247$)	Working in Retirement ($n = 325$)
	$M(SD) / \%$	$M(SD) / \%$	$M(SD) / \%$
Age	63.57 (1.59)	63.65 (1.50)	63.52 (1.65)
Gender (female)	55.42%	59.51%	52.31%
Education (years)	13.86 (3.27)	13.27 (2.96)	14.22 (3.45)
Diseases (T1)	4.90 (3.62)	4.83 (3.42)	4.95 (3.76)

$n = 536 - 572$

2.2.2.2 Measures

Pre-retirement work motivation. Multidimensional work motivation was assessed using 10 items of the Multidimensional Work Motivation Scale (Gagné et al., 2015). Each sub-dimension of work motivation (intrinsic motivation, identified regulation, introjected regulation, external regulation, and amotivation) was measured with two items. The scale started with the question “Why do you or would you put efforts in your current job?”. Example items are “Because I have fun doing my job.” (intrinsic motivation), “Because putting efforts in this job aligns with my personal values.” (identified regulation), “Because I have to prove to myself that I can.” (introjected regulation), “Because others will respect me more (e.g., supervisor, colleagues, family, clients ...).” (external regulation), “I don’t, because I really feel that I’m wasting my time at work.” (amotivation). Spearman–Brown reliability, which is preferable to Cronbach’s alpha for two item scales (Eisinga, Grotenhuis, & Pelzer, 2013), was .57 for amotivation, .76 for external regulation, .67 for introjected regulation, .73 for identified regulation, and .78 for intrinsic motivation. The low reliability for amotivation shows that results with regard to this sub-dimension should be treated cautiously.

Post-retirement work status. Retirement status was assessed using the same single item as in study 2, with answer alternatives (a) no; (b) yes, but working and consider myself a worker; (c) yes, and working, but consider myself a re-

tiree; (d) yes, full-time retiree. Everyone who answered (a) at the first assessment and (b)-(d) at the second was included in the sample, and those who answered b or c were considered working retirees.

Basic Psychological Need Satisfaction. In study II, retirement adjustment was operationalized as change in basic psychological need satisfaction. Satisfaction of the three needs for autonomy, competence and relatedness was assessed using six items of the Basic Psychological Need Satisfaction and Frustration Scale (Chen et al., 2015) on a 5-point Likert scale. Spearman–Brown reliability for autonomy was .66 at the first wave, and .71 at the second. Reliability for relatedness was .78 and .87. Reliability for competence was .64 and .60. Example items are “I feel a sense of choice and freedom in the things I undertake.” (autonomy satisfaction), “I feel that the people I care about also care about me.” (relatedness satisfaction), and “I feel I can successfully complete difficult tasks.” (competence satisfaction).

Covariates. We included the same indicators for basic demographic information (age, gender, education, disease load, job rank) as in study I. Job rank was turned into a dichotomous item (no responsibility = 0, responsibility = 1) in this paper. We further integrated a number of known predictors of change in psychological health over retirement, to test if work motivation has an additional predictive value. These included financial problems (not being able to have 15,000 Swedish crowns [~1,830 US\$]), as well as partner status and the partner’s retirement status (Moen, Kim, & Hofmeister, 2001; Szinovacz & Davey, 2004). We computed two dichotomous variables, one for having a partner who was retired (0/1) and one for having a non-retired partner (0/1), so the reference category in our model were those without a partner. Finally, we included obligations to help children or parents (Dentinger & Clarkberg, 2002; Szinovacz & Davey, 2006). Those were assessed using two single items on a 6-point scale, with scale points being (1) Yes, several times a week; (2) Yes, once a week; (3) Yes, once a month; (4) Yes, once in 3 months; (5) Yes, only once a year; and (6) No, never. Both variables were recoded (1 = No, never to 6 = Yes, several times a week).

2.2.2.3 Analysis

As in study I, we computed latent change score models (McArdle, 2009). Analyses were conducted in Mplus 7.4 (Muthén & Muthén, 1998-2015). This time, need satisfaction was assessed with manifest sum scores, because latent factors should include more than two items. We computed separate models for each need, and applied a stepwise procedure: First, we ran models with work motivation (mean centered), post-retirement work status and covariates predicting baseline and change in need satisfaction. Baseline level and change

were correlated. Second, we added “work motivation x work in retirement“-interaction terms as predictors on change.

2.2.3 Results

2.2.3.1 Changes in need satisfaction

There was a significant mean-level increase in autonomy ($M = 0.20$, $SE = 0.03$, $p < .001$; $\sigma^2 = 0.49$, $SE = 0.03$, $p < .001$), but not in relatedness ($M = 0.02$, $SE = 0.04$, $p = .73$; $\sigma^2 = 0.37$, $SE = 0.02$, $p < .001$) or competence ($M = 0.04$, $SE = 0.03$, $p = .17$; $\sigma^2 = 0.41$, $SE = 0.03$, $p < .001$) between the two waves. There was evidence for regression to the mean in all models, because intercept and change score were negatively correlated ($r = -.42$ for competence, $r = -.50$ for autonomy, $r = -.36$, for relatedness; all p 's $< .001$).

2.2.3.2 Main effects: Work motivation and changes in need satisfaction

In the first series of models, of all sub-dimensions, only intrinsic motivation had a significant effect on changes in need satisfaction: Higher levels of intrinsic work motivation were associated with smaller increases in autonomy ($B = -0.06$, $SE = 0.03$, $p = .020$). This is partly in line with hypothesis 1a, but hypothesis 1b was not supported, because the effect of amotivation on change was not significant in any model.

People working in retirement experienced lower increases in autonomy satisfaction than those retiring full-time ($B = -0.19$, $SE = 0.06$, $p = .002$).

2.2.3.3 Interaction effects: The moderating role of work in retirement

After adding interaction effects, in line with hypothesis 2a, we found significant positive “work in retirement x intrinsic motivation” interaction effects with regard to changes in autonomy ($B = 0.14$, $SE = 0.05$, $p = .002$) and relatedness ($B = 0.16$, $SE = 0.04$, $p < .001$).

Simple slopes showed that the negative association between intrinsic motivation before retirement and changes in autonomy was only significant among retirees ($B = -0.13$, $SE = 0.04$, $p < .001$), not among those who continued to work ($B = 0.00$, $SE = 0.04$, $p = .898$). With regard to changes in relatedness, simple slopes showed that pre-retirement intrinsic work motivation had a positive effect among those who continued to work in retirement ($B = 0.11$, $SE = 0.03$, $p = .001$), but no significant association was found among full-time retirees ($B = -0.06$, $SE = 0.03$, $p = .090$). Figure 4 and Figure 5 illustrate these relationships.

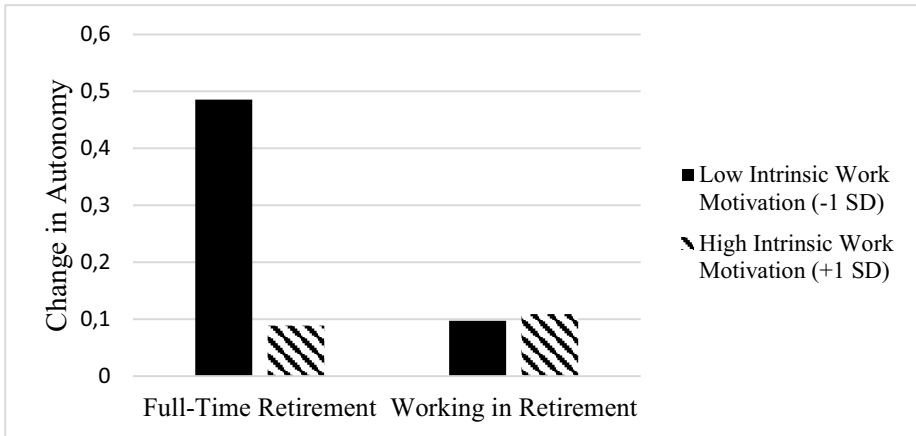


Figure 4. Pre-retirement intrinsic work motivation and changes in autonomy



Figure 5. Pre-retirement intrinsic work motivation and changes in relatedness

Furthermore, in contrast to hypothesis 2b, there was a positive “amotivation x work in retirement” interaction effect ($B = 0.16$, $SE = 0.06$, $p = .005$) with regard to changes in relatedness. Simple slopes showed a positive association between pre-retirement amotivation and changes in relatedness among the working retirees ($B = 0.11$, $SE = 0.04$, $p = .013$), but no significant relationship among full-time retirees ($B = -0.05$, $SE = 0.04$, $p = .215$). Figure 6 illustrates this relationship.

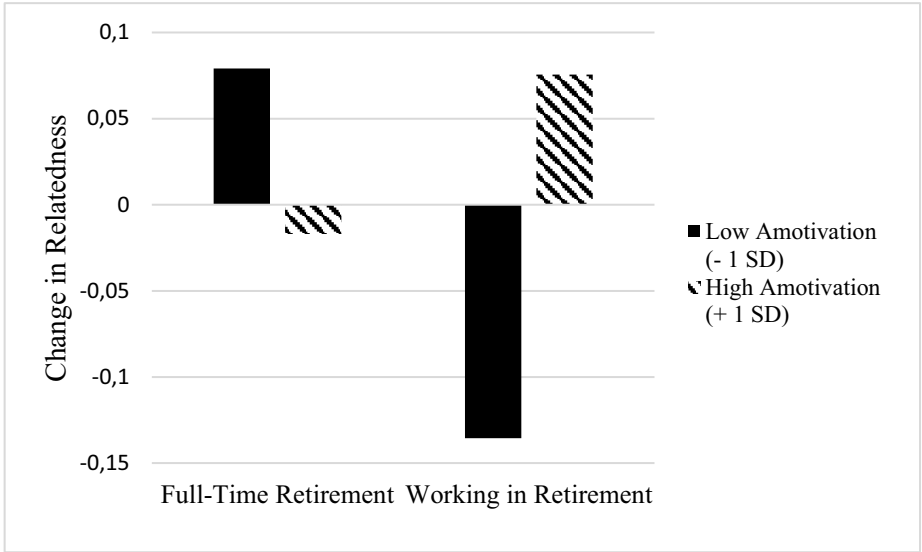


Figure 6. Pre-retirement amotivation and changes in relatedness

2.3 Study III

2.3.1 Aims

There is little evidence if the satisfaction of basic psychological needs contributes to global well-being in the same way after retirement as before. Changes might indicate post-retirement reprioritization. Study III therefore focused on the association of basic psychological need satisfaction and well-being before and after retirement.

The main *research question* was if there are changes in the within-person couplings after retirement, or differences in between-person associations between workers and retirees.

In line with previous findings (e.g. Houliort et al., 2017), as well as theoretical notions (Ryan & Deci, 2017), we expected for both levels of analysis:

Hypothesis 1: Autonomy, competence, and relatedness are independently related to well-being before and after retirement.

Furthermore, we had specific hypotheses for changes in the associations between need satisfaction and well-being:

Hypothesis 2: Autonomy is more strongly linked to well-being after retirement.

Hypothesis 3: Relatedness is more strongly linked to well-being after retirement.

Hypothesis 4: Competence is less strongly linked to well-being after retirement.

2.3.2 Method

2.3.2.1 Sample

In study III, we included four waves of data of the HEARTS study. We included all individuals and data points, except time points when individuals were neither retired nor working (i.e. time points when individuals were for example unemployed or on sick leave). We ended up with a sample of $n = 5,634$, of which 5,074 individuals had enough data on the main variables to be

included in the analysis. The multi-level models included 15,327 (person x occasion) data points. Table 4 shows descriptive statistics of the study population at the four time points. In the study sample, 1,247 individuals retired between waves, and 143 persons went back to work.

Table 4. Descriptive Statistics Study III

	T1	T2	T3	T4
	<i>M(SD) / %</i>	<i>M(SD) / %</i>	<i>M(SD) / %</i>	<i>M(SD) / %</i>
Age	63.14 (2.04)	64.24 (2.02)	65.23 (2.00)	66.17 (2.00)
Gender (% female)	53.61%	54.3%	53.64%	53.58%
Education (years)	13.73 (3.28)	13.83 (3.30)	13.85 (3.30)	13.85 (3.27)
Diseases	4.70 (3.57)	4.64 (3.58)	4.66 (3.55)	4.82 (3.56)
Retirement (% retired)	29.78%	44.22%	55.28 %	64.16 %

n = 5,634. *Note:* The sample statistics include all individuals that had valid data on retirement status at the respective time point. The *n* per cell varied from 3,562 to 5,114.

2.3.2.2 Measures

Well-Being. Well-being was operationalized as life satisfaction, measured by the Satisfaction with Life Scale (Diener et al., 1984). Cronbach's alpha reliability was $\alpha = .92$ for the first two waves, and $\alpha = .93$ for the third and fourth.

Basic psychological need satisfaction. As in study II, basic psychological need satisfaction was assessed using six items of the BPNFS (Chen et al., 2015). Spearman-Brown reliabilities for autonomy were $\alpha = .73$ at the first time point, $\alpha = .75$ at the second and third, and $\alpha = .74$ at the fourth time point. Reliabilities for relatedness were $\alpha = .80$ at all four time points. Reliabilities for competence were $\alpha = .66$ for all time points.

Retirement. As in studies I-II, we included retirement status based on the single item with four answer alternatives: (a) no; (b) yes, but working and consider myself a worker; (c) yes, working at the same time, but consider myself a retiree; (d) yes, full-time retiree. In study III, we assumed that adaptive reprioritization would rather occur after people started to perceive themselves as

retired than when they started to take out pensions. Thus, only people who perceived themselves to be retired (c/d), were coded as retired.

Covariates. We included, age, gender, education (measured in years) and disease load as covariates in our models.

2.3.2.3 Analysis

In study III, we applied multi-level models to the data. This allowed us to distinguish associations at the within-person level (e.g. if people were more satisfied with their life at time points when they felt more autonomous, compared to time points when they felt less autonomous), and the between-person level (e.g. if people who felt more autonomous were also more satisfied with their life than those who felt less autonomous). Analyses were conducted in Mplus 7.4 (Muthén & Muthén, 1998-2015).

Our main interest were interactions of need satisfaction and retirement status on the within- and between-level. A positive within-person “need satisfaction x retirement” interaction effect, for example with regard to competence, would imply that competence was more closely linked to well-being within people once they were retired. A negative within-person interaction effect implies that the association got weaker in retirement. Positive between-person interaction effects mean a stronger between-person association of need satisfaction and well-being among those retired than among those working.

Time in study was integrated as a within-person predictor. Predictors with only between-person variance (i.e. gender and education) were grand mean centered in our analyses. Predictors differing both between and within persons (retirement, autonomy, competence, relatedness, disease load) were decomposed into latent between-and within-level parts (Lüdtke et al., 2008).

We proceeded in a stepwise approach with five models, testing for significant changes in model fit (-2LL) with every step. We started with a model without predictors (Model 1), in a next step, we added covariates (Model 2), afterwards we added satisfaction of the three needs and retirement status (Model 3), and finally we added interaction terms of retirement status and need satisfaction on both levels (Model 4). This final model was repeated with grand mean centering of need satisfaction and retirement status (Model 5), because this is recommended for unbiased estimations of between-person interaction effects (Enders & Tofighi, 2007; Ryu, 2015).

2.3.3 Results

2.3.3.1 Main effects

In line with *hypothesis 1*, autonomy ($B = 0.45$, $SE = 0.02$, $p < .001$), competence ($B = 0.18$, $SE = 0.02$, $p < .001$) and relatedness need satisfaction ($B = 0.22$, $SE = 0.02$, $p < .001$) all independently contributed to well-being at the within-person level. Thus, people reported higher well-being at time points when they felt more autonomous, competent and related. In contrast to *hypothesis 1*, at the between-person level, only higher autonomy ($B = 1.14$, $SE = 0.04$, $p < .001$) and relatedness ($B = 0.51$, $SE = 0.04$, $p < .001$), not competence ($B = -0.07$, $SE = 0.04$, $p = .075$) were independently associated with higher well-being.

2.3.3.2 Interaction effects

In line with *hypothesis 2*, there was a small positive “autonomy x retirement” interaction effect at the within-person level ($B = 0.06$, $SE = 0.03$, $p = .048$). Hence, the positive within-person association of autonomy and well-being became stronger after retirement (see Figure 7). *Hypotheses 3-4* were not supported in the within-person interaction effects.

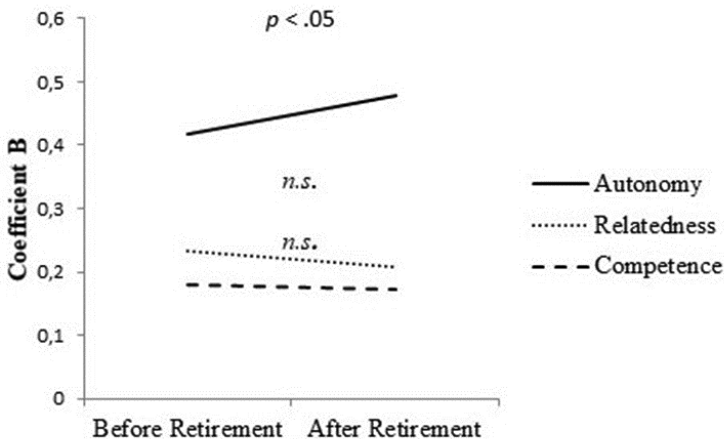


Figure 7. Within-person associations of need satisfaction and well-being

At the between-person level, in contrast to *hypothesis 4*, there was a positive “competence x retirement” interaction effect ($B = 0.42$, $SE = 0.12$, $p = .001$), but a negative main effect ($B = -0.09$, $SE = 0.04$, $p = .038$). Figure 8 shows what this means: Among workers, controlling for satisfaction of the other needs, those with higher perceived competence tended to report lower well-being. Among retirees, those with higher perceived competence tended to report higher well-being. The effect, however, was not significant for retirees².

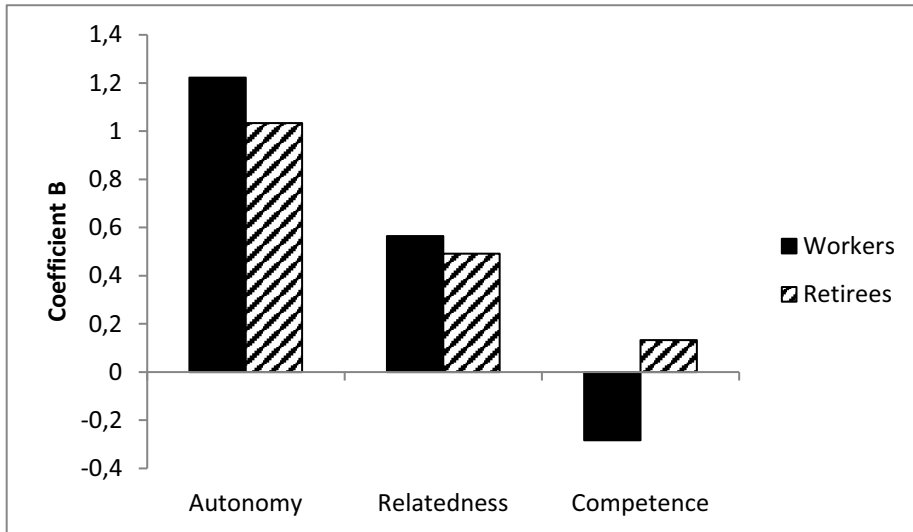


Figure 8. Between-person associations of need satisfaction and well-being

² change from published article, a correction has been published and is included in the present thesis

2.4 Study IV

2.4.1 Aims

Study IV investigated changes in engagement in leisure activities across the retirement transition as a form of assimilative adjustment to retirement. We distinguished intellectual, social and physical leisure activity engagement (see e.g. Lam et al., 2015). In particular, we were interested in three research questions.

Research question 1 was how engagement in different types of leisure activities changes across the retirement transition.

Research question 2 was what predicts changes in leisure activity engagement.

Research question 3 was if pre-retirement level of and change in leisure activity engagement are related to level and change in depressive symptoms.

Because of the novelty of this approach, we did not specify hypotheses.

2.4.2 Method

2.4.2.1 Sample

Four waves of the HEARTS study were used in this study. All participants who worked at baseline and retired between waves were included, unless they reported to be not retired at later waves. The final sample consisted of 1,124 retirees. Table 5 shows sample characteristics.

Table 5. Descriptive Statistics Study IV

	<i>M (SD) / %</i>
Age at baseline	63.34 (1.64)
Age at retirement	64.26 (1.56)
Gender (% female)	56.81 %
Tertiary education	53.48%
Number of diseases (pre-retirement)	3.55 (2.63)

n = 1,083 – 1,124.

2.4.2.2 Measures

Leisure Activity. Participants reported their engagement in a list of activities. Each activity was coded on a scale from 1 (never or almost never) to 6

(everyday). We recoded this scale to 0-5. We computed sum scores for intellectual, social, and physical leisure activity engagement, but did also study the number of activities people engaged in. Table 6 shows the activities included.

Table 6. Leisure Activities

<i>Intellectual Activities</i>	<i>Social Activities</i>	<i>Physical Activities</i>
Reading books	Cultural activities	Gardening
Reading newspapers	Religious activities	Outdoor activities
Using the computer	Eating out	Walking
Crosswords	Board games	Dancing
Handworks	Visiting relatives	Golf
	Being visited by relatives	Boule
	Visiting friends	Ball games
	Being visited by friends	Exercise
	Watching sports at the stadium	
	Study groups	

Retirement Status. As in studies I-III, retirement status was based on a single item. As in study III, those who perceived themselves as retirees were considered retired.

Depressive symptoms. Depressive symptoms were assessed with the 8-item short form of the CES-D scale (Van de Velde, Levecque & Bracke, 2009). Participants should report how often they experienced eight specific depressive symptoms over the last week. Answer alternatives were 0 = “Rarely / never (less than 1 day)”, 1 = “1-2 days”, 2 = “3-4 days”, and 3 = “Most/all of the time (5-7 days)”. Analyses were based on mean values. Cronbach’s alpha was $\alpha = .80$ for all time points.

Predictors of change. At the individual level, we included age at retirement, gender, education, partner status, basic financial resources, and disease load. Information about age, gender, education and financial resources were taken from the first wave. In study IV, we differentiated between highly educated individuals (tertiary education) and others. As in study II, basic financial resources were assessed with the question if participants could manage to afford 15,000 Swedish crowns (by means of their own household, with help from others, or not at all). In study IV, we coded those who could afford it by own means as having financial resources. Disease load was assessed at the last wave before retirement.

We included physical work demands and work satisfaction as indicators of the pre-retirement work life. Information was taken from the last wave before retirement. Physical work demands were assessed with the item “My work is

physically demanding.” on a scale from 1 (completely wrong) to 5 (completely true). Work satisfaction was assessed with an item phrased “All things considered, how satisfied are you with your work?”, which was answered on a 7-point Likert scale from 1 (very satisfied) to 7 (very dissatisfied). We recoded this item, so higher scores meant higher satisfaction. Both items were modified from the COPSQ 2 questionnaire (Pejtersen, Kristensen, Borg, & Bjorner, 2010).

We included working in retirement and control over retirement as facets of the retirement context. Both variables were assessed at the first wave after retirement. The single item on retirement status was used to categorize people as working in retirement or not (1/0). Control over retirement was assessed with one item phrased “Did you choose to retire, or did you feel forced to do so (e.g., by health or organizational reasons etc.)?”. Response categories were 1 “It was my decision (100% my choice)”, 2 “It was mostly my decision (~ 75% my choice)”, 3 “It was partly my decision (~ 50% my choice)”, 4 “It was my decision to a small extent (~ 25% my choice)”, and 5 “It was not my decision, I was forced (0% my choice)”. We reversed the coding so higher scores indicated more control.

2.4.2.3 Analysis

To answer the first research question on how leisure activity engagement changes across retirement, we computed latent growth curves (e.g. McArdle, 1988). Change over time was modeled with a random linear and a fixed quadratic slope for both leisure activity engagement and numbers of activities. Data was re-arranged around the retirement event – data from on year before the event up to three years after the event were included.

To answer the second research question, we added predictors to the previous models on level of engagement.

To answer the third research question, we computed three bivariate dual change score models (BDCSM) to study the bidirectional relationship of leisure activity engagement and mental health, controlling for age, gender, education and disease load before retirement. The BDCSM is a powerful tool to investigate manifold associations of two variables over time. A univariate dual change score model includes two change parameters, both a general linear slope and a proportional change parameter to capture non-linear change. Apart from relationships between intercepts and slopes, the bivariate dual change score model allows to investigate effects of levels of one variable at one time point on subsequent change (Schöllgen, Huxhold, & Schmiedek, 2012; Wetzel

& Huxhold, 2016). Furthermore, we allowed a covariance of time-specific residuals of activity and depression, thereby investigating a relationship of time-specific deviances from the overall trajectory.

2.4.3 Results

2.4.3.1 Changes in leisure activity

Retirees showed increases in reported intellectual leisure activity engagement, but mainly directly after retirement, with relative stability afterwards (linear slope: $B = 0.71$, $SE = 0.10$, $p < .001$; quadratic slope: $B = -0.19$, $SE = 0.04$, $p < .001$). The same applied to social (linear slope: $B = 0.90$, $SE = 0.12$, $p < .001$; quadratic slope: $B = -0.19$, $SE = 0.05$, $p < .001$), and physical leisure activity engagement (linear slope: $B = 1.18$, $SE = 0.11$, $p < .001$; quadratic slope: $B = -0.25$, $SE = 0.04$, $p < .001$). Figures 9-11 illustrate the changes.



Figure 9. Changes in intellectual leisure activity engagement ($n = 1,124$)

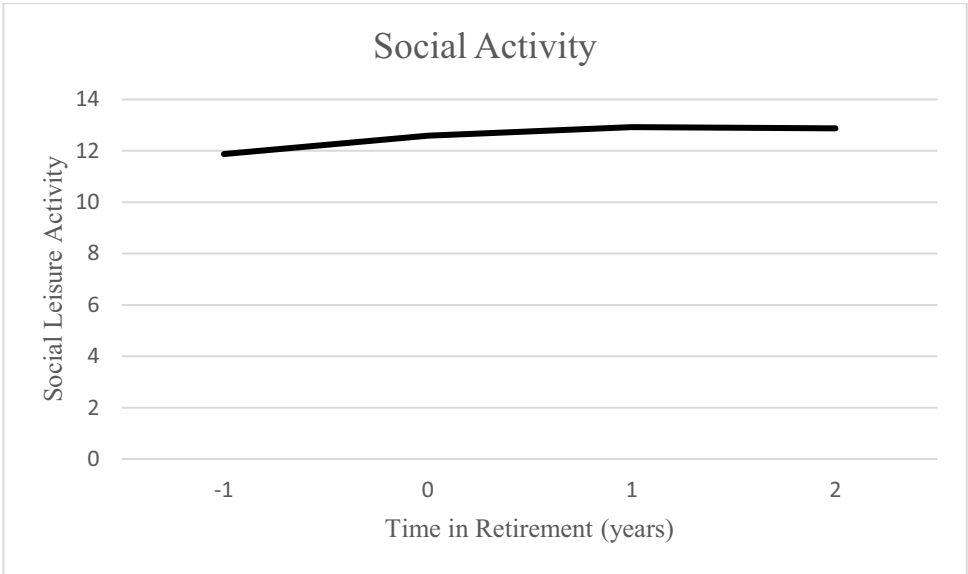


Figure 10. Changes in social leisure activity engagement ($n = 1,124$)

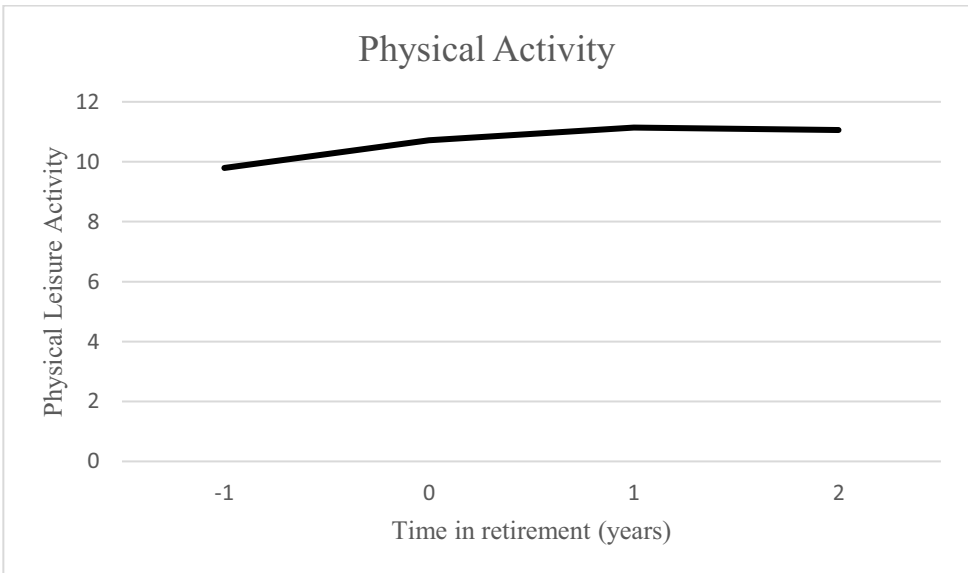


Figure 11. Changes in physical leisure activity engagement ($n = 1,124$)

Furthermore, the number of social leisure activities (linear slope: $B = 0.27$, $SE = 0.06$, $p < .001$; quadratic slope: $B = -0.05$, $SE = 0.02$, $p = .011$) and physical leisure activities (linear slope: $B = 0.09$, $SE = 0.04$, $p = .016$; quadratic slope: $B = -0.02$, $SE = 0.01$, $p = .161$) increased. The increase in the number of social activities mainly happened directly after retirement, which is shown by the significant negative quadratic slope. The number of intellectual activities did not change significantly over time (linear slope: $B = 0.04$, $SE = 0.03$, $p = .131$; quadratic slope: $B = -0.01$, $SE = 0.01$, $p = .380$).

2.4.3.2 Predictors of leisure activity engagement

Age, gender, education, partner status, disease load, basic financial resources, physical work demands, work satisfaction, post-retirement work and perceived control over retirement were included as predictors of pre-retirement level as well as changes in leisure activity engagement. Only gender, work satisfaction and control over retirement were significant predictors of change: Women were more likely than men to increase their intellectual ($B = 0.26$, $SE = 0.09$, $p = .004$) and social ($B = 0.28$, $SE = 0.11$, $p = .009$) leisure activity engagement, but less likely than men to increase their physical leisure activity engagement ($B = -0.23$, $SE = 0.09$, $p = .015$). Higher pre-retirement work satisfaction was related to fewer increases in intellectual leisure activity engagement ($B = -0.09$, $SE = 0.04$, $p = .026$). Higher control over retirement was related to higher increases in physical leisure activity engagement ($B = 0.12$, $SE = 0.06$, $p = .028$). Intercept and slopes were not correlated for any domain of activity.

2.4.3.2 Leisure activity and depressive symptoms

Depressive symptoms decreased directly after retirement and were relatively stable afterwards (see Figure 12).

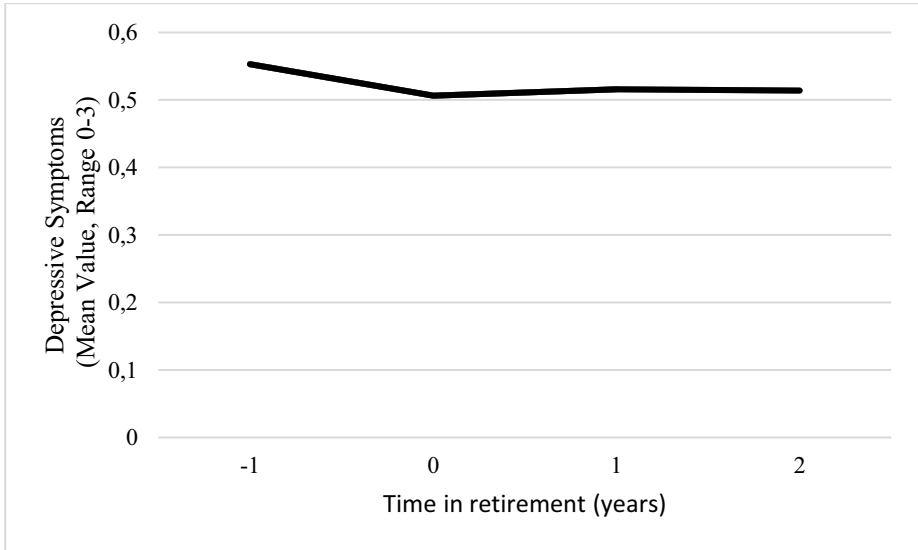


Figure 12. Changes in depressive symptoms ($n = 1.124$)

A higher level of intellectual leisure activity engagement before retirement was significantly associated with a lower level of depressive symptoms (intercept-intercept covariance, $B = -0.12$, $SE = 0.04$, $p = .005$). Level of intellectual activity was not related to change in depressive symptoms, but stronger increases in intellectual activity were related to stronger decreases in depressive symptoms (slope-slope covariance, $B = -0.44$, $SE = 0.18$, $p = .012$). A higher level of pre-retirement depressive symptoms was related to smaller increases in intellectual activity engagement (intercept-slope covariance, $B = -0.43$, $SE = 0.16$, $p = .007$). There was no significant time-specific covariance (i.e. correlated residuals). Surprisingly, in terms of cross-domain effects, higher depressive symptoms predicted short-term increases in intellectual leisure activity engagement point ($B = 5.57$, $SE = 2.45$, $p = .023$).

A higher pre-retirement level of social leisure activity engagement was related to less depressive symptoms (intercept- intercept covariance, $B = -0.19$, $SE = 0.05$, $p < .001$) and to decreases in depressive symptoms (intercept-slope covariance, $B = -0.29$, $SE = 0.13$, $p = .022$). Furthermore, increases in social leisure activity engagement were associated with decreases in depressive symptoms (slope-slope covariance, $B = -0.30$, $SE = 0.13$, $p = .020$). More depressive symptoms before retirement were related to decreases in social activity engagement (intercept-slope covariance, $B = -0.26$, $SE = 0.11$, $p = .021$). Residuals were significantly associated – at time points when people were particularly active, they reported less depressive symptoms ($B = -0.04$, $SE = 0.02$, $p = .010$). There were no significant cross-lagged effects.

The level of baseline physical leisure activity engagement was not significantly associated with level of depressive symptoms, but with decreases in depressive symptoms (intercept-slope covariance, $B = -0.20$, $SE = 0.09$, $p = .025$). Depressive symptoms at baseline did not predict change in physical leisure activity engagement, and changes in physical activity engagement were not significantly associated with changes in depressive symptoms. At time points when individuals were more physically active, they had less depressive symptoms ($B = -0.06$, $SE = 0.01$, $p < .001$), but there were no significant cross-lagged effects.

Chapter 3

Chapter 3

Discussion

3.1 Changes in Psychological Health

The focus of the current thesis is on change in different dimensions of psychological health across retirement. In early theoretical conceptualizations, retirement was largely seen as a critical, stressful life event (Ellison, 1968). This makes sense, given the important role of work throughout the life course for individual identity, status, and need satisfaction (Jahoda, 1981; Wetzel & Mahne, 2016). However, our findings reported in the studies I, II and IV in the present thesis largely disconfirm such ideas. Instead, and in line with more recent studies (Hansson et al., 2017; Latif, 2011; Wetzel et al., 2016), we found increases in life satisfaction and mental health in the retirement transition, demonstrating a comparably good retirement adjustment in our sample. Following the BPNT approach viewing basic psychological need satisfaction as the driving force behind well-being and psychological health (Ryan & Deci, 2017), such increases might mainly be driven by increased satisfaction of the need for autonomy, and not so much by satisfaction of the needs for competence and relatedness, which did not change in the transition in study II. This is in line with ideas of a “honeymoon” period of new freedom and a relief from work life in the first time after retirement (Atchley, 1976). Future mediation analyses may allow a better understanding of the role of changes in need satisfaction for the increase in global life satisfaction.

Although there were increases in life satisfaction and autonomy, as well as a short-term decrease in depressive symptoms, across the retirement transition, Figure 13 shows that retirees in our sample had comparably good psychological health already before retirement and the changes are on average comparably small.

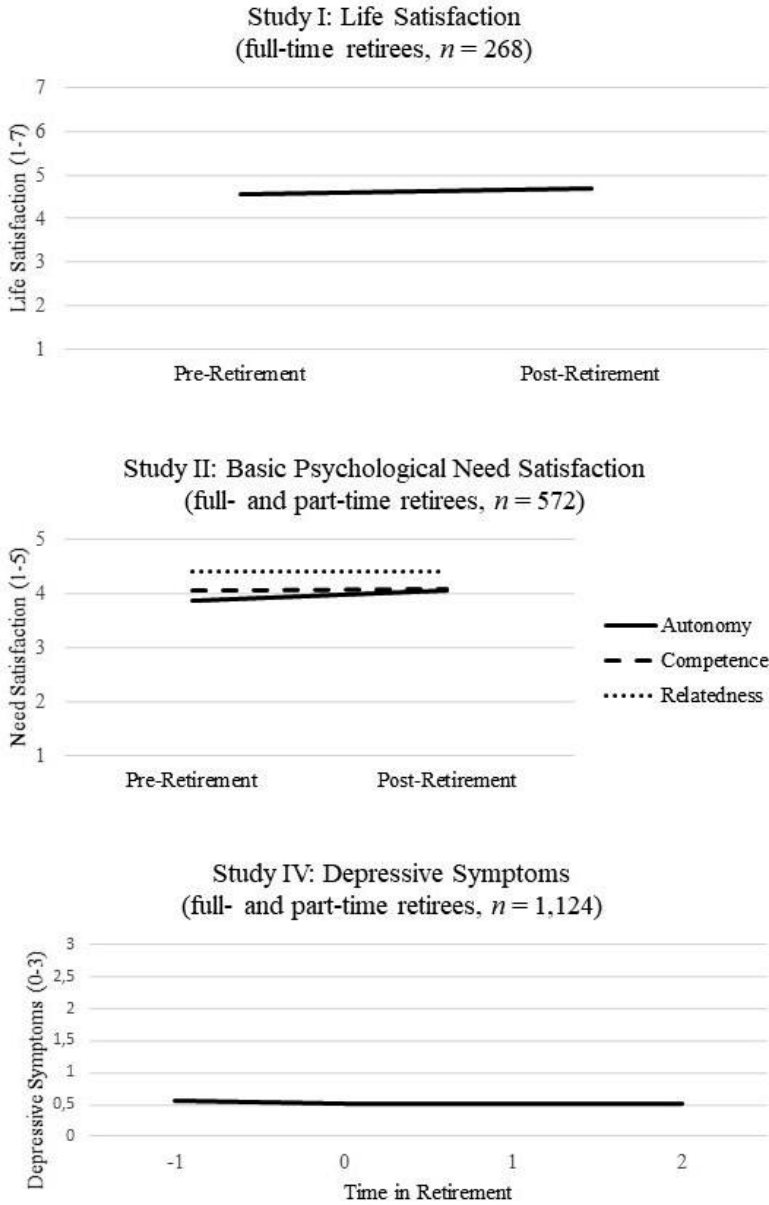


Figure 13. Change in psychological health, based on studies I, II and IV.

Study IV showed that although the increase in psychological health was mainly restricted to the direct transition period, retirees seem to maintain a higher level of psychological health over the first years of retirement. This is in line with other recent findings that changes after a life event in fact can be long-lasting (Luhmann et al., 2012), in contrast to the assumptions in earlier set point theories (Brickmann & Campbell, 1971). We found no evidence for Atchley's (1976) assumption of a "disenchantment phase" with increasing adjustment problems. Nevertheless, our results are restricted to the first years of the retirement period – participants retiring between waves experienced three years of retirement at the most. Thus, compromised health and other age-related challenges could lead to adjustment problems later on.

Our findings are also of interest in light of the current political debate with regard to raising the retirement age and increasing work participation in older adults. This idea has been promoted by some researchers arguing that retirement has negative health-related consequences (Dave et al., 2008), and that working longer would be beneficial for individual health in the long term, if work demands are adjusted over the life span (Staudinger, Finkelstein, Calvo, & Sivaramakrishnan, 2016). Nevertheless, the positive effect of retirement on psychological health identified in study I, II and IV will be delayed in the future (Taylor, 2019). Public policy needs to consider the heterogeneity among older workers and their ability and motivation for a prolonged working life (Hofäcker & Naumann, 2015).

3.2 Pre-Retirement Predictors of Change

We found a considerable heterogeneity concerning change in psychological health in our sample. Psychological and lifestyle factors, including personality, work motivation and leisure activity engagement predict interindividual differences in change in psychological health.

Study I showed that a person-oriented approach to personality helps to understand the complex interaction among personality characteristics affecting the relationship between retirement and life satisfaction. We found that for a group of people with a particular personality profile, scoring high on neuroticism and low on extraversion, agreeableness, openness and conscientiousness (“undercontrollers”), retirement was associated with losses in life satisfaction, whereas for the main sample, there was a positive effect of retirement. In our variable-oriented models based on personality traits, high extraversion and low neuroticism were related to higher increases in life satisfaction in the whole sample, while high scores in agreeableness were related to a more positive change in life satisfaction for retiring participants only. One might argue that agreeableness could be the only trait responsible for the disadvantages of “undercontrollers” in the retirement process. However, 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 change in life satisfaction. Based on this observation, personality profiles seem to better account for experiences around retirement compared with a single trait approach. In this respect, the person-oriented approach also offers a valuable complementary perspective for our understanding of the retirement transition.

The underlying mechanisms of the effect of personality are still unresolved and they are currently investigated using HEARTS data (Hansson et al., under review). Reis and Pushkar Gold (1993) argued that personality could influence retirement adjustment via differences in pre-retirement resources and post-retirement adjustment behavior. As 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 for life changes and show 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.

Differences between our findings and other studies (Kesavayuth et al. 2016; Ryan et al., 2017; Serrat et al., 2017) may result from different samples, measures and analyses. For example, Serrat et al. (2017) and Ryan et al. (2017), found positive effects of low neuroticism and high extraversion, but they did

only investigate retirees. As we found such effects for retirees and non-retiring workers alike, the effects of extraversion and neuroticism are most likely not specific to the retirement transition.

In study II, we investigated the role of pre-retirement work motivation for retirement adjustment. Partly in line with our hypotheses, retirement seems to foster autonomy in people who were not intrinsically motivated for their work. Coping with the loss of the work role, which van Solinge and Henkens (2008) proposed as one of the main tasks of retirement adjustment, is easier for them, and the relief from unloved routines will therefore be much stronger. Among those who continue to work in retirement, people with higher pre-retirement intrinsic work motivation seem to be better off than those with lower intrinsic work motivation, at least in terms of relatedness. Part-time retirees who were intrinsically motivated for their job might be able to enjoy both the positive team climate at their former work place, as well as more time with friends and family. These findings support earlier theoretical and empirical studies highlighting the importance of work motivation for work-related outcomes over the life span (Gagné & Deci, 2005), as well as the importance of the prior work life for retirement adjustment (Wang, 2007).

Surprisingly and in contrast to our hypotheses, higher amotivation was also associated with increases in relatedness across retirement. There are two likely explanations for this finding. First, people with high amotivation might be likely to change their work environment if they have to work in retirement. In their post-retirement work, they might experience an improved team climate, or reduce their work hours to spend more time with their family and friends. Unfortunately, we were not able to test this hypothesis further, because little data is available on the post-retirement jobs. Second, the finding might be the result of measurement problems, given the low reliability of the amotivation measure. Interestingly, identified, introjected and external regulation were not related to changes in need satisfaction, although earlier studies found differential effects of the separate dimensions (e.g. Chemolli & Gagné, 2014).

Our results from study IV showed that a higher pre-retirement leisure activity engagement with regard to physical or social activity was related to stronger decreases in depressive symptoms. This confirms earlier studies showing benefits of non-work related roles and activity (Ryser & Wernli, 2016). The literature suggests some possible mechanisms for this finding, which should be tested in future investigations: First, people with alternative roles could experience less problems with abandoning the work role (Ryser & Wernli, 2016). Second, social and physical activity can distract from adjustment problems and social contacts can provide emotional and instrumental social support (Huxhold et al., 2013). Third, physical activity is believed to act

as a buffer against stress in general and life event stress in particular (Harris et al., 2006).

All three studies show that pre-retirement life circumstances can account for interindividual differences in change in psychological health across the retirement transition and in retirement adjustment. An adaptive personality (study I), a weaker connection to the work place (study II), as well as non-work related activities (study IV) promote a successful retirement adjustment. However, people can also adjust to the changing environment after retirement in specific ways.

3.3 Post-Retirement Assimilation and Accomodation

In study III and IV we aimed at a better understanding of assimilative and accommodative post-retirement adjustment.

With regard to assimilative adjustment, study II showed that working retirees did not experience the same increase in autonomy as full-time retirees. Continuing to work in retirement does not seem to ease the transition per se. This finding is in line with earlier findings with regard to life satisfaction (Hansson et al., 2017). Those who continue to work in retirement do most likely not experience the same relief and new freedom full-time retirees feel when leaving their work and engaging in other valued life areas. As previously mentioned, people who worked in retirement showed stronger increases in relatedness if they were intrinsically motivated for their work. Therefor the effect of work in retirement most likely depends on pre-retirement work life and resources, but also on the type of post-retirement work as well as the reasons why retirees continue to work.

Study IV showed that retirees in our sample increased their level of leisure activity engagement in multiple domains, which can be seen as assimilative adjustment. In contrast to the findings of Long (1987), both engagement level and number of activities increased. Interestingly, there were gender-specific changes, with women displaying stronger increases in their engagement in social and intellectual leisure activities, but men showing stronger increases in physical leisure activity. These findings may result from gender-specific interests, but also challenges and opportunities in the retirement transition. Another important finding is the positive association of control over retirement and increases in physical leisure activity engagement. Serious health events between waves might be responsible both for a forced retirement and lower increases in physical leisure activity, but comparable effects have been found for other health behaviors after retirement as well (Bacharach, Bamberger, Biron, & Horowitz-Rosen, 2008). Involuntary retirees may be less prepared for retirement, or be too occupied with coping with the loss of the work place to engage in physical activities. Therefore, the negative effect of involuntary retirement on health (van Solinge, 2007) might be partly a result of worse post-retirement health behavior. This needs to be further investigated in future studies, given the policy implications.

Leisure activity offers identity (Atchley, 1971) and social support (Chang et al., 2014). An increase of one's activity level may be an effective strategy to deal with certain retirement-related challenges. The negative relationship of physical and social leisure activity engagement with changes in depressive symptoms has already been discussed. Increasing one's activity level after re-

tirement might have additional effects by facilitating the two main tasks in retirement adjustment (Van Solinge & Henkens, 2008), i.e., compensating for work-related losses, and establishing a satisfying new lifestyle. The consequences of such increases were evaluated in study IV. The fact that stronger increases in intellectual and social activity were associated with stronger decreases in depressive symptoms support this assumptions. Furthermore, at time points when individuals were more physically or socially active, they also reported lower depressive symptoms. However, as there were no significant short-term effects of activity engagement on change in depressive symptoms, it remains unclear if increases in activity contribute to the adjustment process over and above the overall activity level. Furthermore, the association of pre-retirement depressive symptoms with changes in intellectual and social leisure activities, as well as the (positive) effect of depressive symptoms on changes in intellectual activity engagement show that the relationship of activity and mental health is bi-directional.

Changes in leisure activity engagement were found to be most pronounced directly after the transition. The higher activity level was maintained over the first years after retirement. This finding is encouraging given the importance of activity for physical (Menec, 2003) and cognitive health (Andel et al., 2016). Researchers have discussed whether the retirement transition period might be a crucial time window for interventions to improve health behaviors and support physical activity (Ding et al., 2016; Smeaton, Barnes, & Vegeris, 2013). Such interventions would need to consider optimizing the initial establishment of activity after retirement, as well as the maintenance of newly acquired routines.

Study III showed that after retirement, the association of basic psychological need satisfaction and well-being changes in specific ways. Following Neubauer et al.'s (2018) line of reasoning, we had expected compensative reprioritization, namely a downplaying of the importance of competence after retirement, with a focus on autonomy and relatedness instead, which should result in changing associations at the within-person and the between-person level. However, on the within-person level, we only found evidence for an increased association of autonomy and well-being, but no increased association of relatedness and well-being, nor a decrease in the association of competence and well-being. Hence, our hypotheses were only partly confirmed. Time points when individuals feel more competent and more related seem to be related to well-being in the same way before retirement as after retirement.

As competence did not decrease in the retirement transition (see study II), there was no need to adapt by withdrawing from the need to perceive competence. Whereas reprioritization in response to losses might be a good explanation for earlier findings by Neubauer et al. (2018), the increased association

between autonomy and well-being does most likely not constitute a comparable process. Nevertheless, people do not only change their goals because they are forced to do so. Over the life span, people react to gains and losses with different forms of adaptation (Freund, Napolitano, & Knecht, 2016). The observed changes may be explained by changing experiences in the post-retirement episode – as retirement is associated with increases in autonomy (see study II), retirees might have “acquired a taste for it”, or learnt to benefit from it. This is in line with earlier findings showing stronger effects of need satisfaction on well-being for those who experienced it more frequently (Reis et al., 2000), but such differences have previously only been captured on the between-person level, not within-persons. The effect of autonomy could also be stronger after retirement because people anticipate autonomy in their post-retirement life and thus are more sensitive to it. For now, it remains unclear if the observed changes are adaptive. This could be operationalized by investigating whether those who displayed a stronger within-person association of autonomy and well-being after retirement experienced higher overall well-being. Investigations of interindividual differences in within-person couplings are therefore recommended for future studies (Neubauer et al., 2017).

On the between-person level, we found that competence showed a negative association with well-being before retirement, whereas the effect was positive, but not significant in retirees. This finding was unexpected, but is in line with findings showing that those who feel highly competent at work, but do not experience relatedness and autonomy to a comparable degree, show less affection for work and higher turnover intentions (Van den Broeck, Ferris, Chang, & Rosen, 2016). In the last years of work, those who feel highly competent might mainly get their sense of competence from the work place, and might be more likely to feel under-challenged and dissatisfied with their work, which influences global well-being. After retirement, perceived competence may come from other life areas and have fewer effects on well-being. Alternatively, the findings may result from selection effects, for example if the combination of high competence and high well-being before retirement would make it more likely to retire. In this case, among those still working at the beginning of our study, people scoring high in one and low in the other variable would be overrepresented. This would lead to a negative effect among workers without any causal relationship.

Although the identified patterns do most likely not mirror accommodative adjustment strategies, they show that the importance of need satisfaction can change over important life events. Life span approaches can help to identify periods when changes are likely to occur, and propose hypotheses about the nature of these changes.

3.4 Strengths and Limitations

The presented studies were solidly based in current research on retirement adjustment by specifically investigating interindividual differences in change in psychological health (Hansson et al., 2017; Wang et al., 2011). Our studies can hopefully enrich the literature on retirement adjustment in several ways.

First, we included several measures of psychological health in the same sample, which allows some comparison concerning differences and similarities of different facets of human experience around retirement (Gerstorff, Hülür, Wagner, Kunzmann, & Ram, 2018; Wang et al., 2011; Wettstein et al., 2015). To our knowledge, study II is the first study to investigate change in basic psychological need satisfaction across retirement, which provided a more nuanced view on changes during the transition. Moreover, studies of change in need satisfaction after life events are hitherto largely missing in current research based on self-determination theory. Another strength of our studies is the unique dataset, which is specifically tailored for the addressed research questions. In addition, previous research on retirement has mainly been conducted from sociological or even atheoretical and purely descriptive perspectives. The present thesis helps to fill some of the research gaps by integrating current theories of personality, motivation, and life span psychology into the study of retirement outcomes.

The four studies strengthen the role of psychological factors such as personality and work motivation for psychological health in the retirement transition. Paper I adds to the literature, as it is not only one of the first studies on the role of personality on retirement, but it is also the first investigating personality profiles instead of only traits, which can provide additional insights. Paper II contributes by including more nuanced measures of work motivation than usually used in retirement research (Büsch, Dittrich, & Lieberum, 2010), which helps filling the more general term of “work role attachment” from role theory with life. The use of several work motivation sub-dimensions as predictors (especially in combination with basic psychological need satisfaction as a measure of retirement adjustment) helps to understand what people actually gain from their work place, and what they can gain from retiring. The concept of need satisfaction is part of the resource based dynamic perspective on retirement adjustment (Wang et al., 2011), but it has been largely ignored in the literature. Our use of basic psychological need satisfaction as an outcome is a first step in addressing the concept of need satisfaction directly in research on retirement. Furthermore, research on multi-dimensional work motivation has previously almost exclusively addressed young or middle-aged individuals, whereas we investigated its predictive value around retirement age.

Whereas most available studies with regard to retirement adjustment have mainly targeted predictors of change in psychological health, the findings of study III highlight the fact that not only the level of psychological health can change across retirement, but the covariance structure may change as well. Scholars applying the Basic Psychological Needs Theory usually assume stability in the influence of need satisfaction on well-being over the life span (Ryan & La Guardia, 2000). Study III is one of few studies tackling this claim (Neubauer et al., 2018). In fact, it is the only study I am aware of addressing changes in within-person associations between need satisfaction and well-being instead of between-person effects (Neubauer et al., 2017; van Assche, van der Keep-Deeder, Audenaert, de Schryver, & Vansteenkiste, 2018). In study III we applied life span theories to the retirement adjustment process, which has been recommended (Löckenhoff, 2012), but was seldom realized in actual empirical research.

Study IV contributes to our understanding of retirement adjustment by specifically addressing lifestyle changes as means to adjust to retirement. Most studies on this subject often only included global measures of activity and used either cross-sectional data or only two time points. We included different domains of leisure activity and modelled non-linear change over three years to understand trajectories of leisure activity engagement.

The studies share some limitations: First, all studies are based on the HEARTS dataset. Although this is an impressive longitudinal study with many strengths, problems with the study design affect all analyses. As mentioned, our analyses were conducted based on a Swedish sample in 2015-2018, hence effects are specific to this population. Furthermore, the HEARTS sample is not fully representative for the general population (Lindwall et al., 2017), as those with lower education and most likely also with worse health are underrepresented. The sample might also differ from the Swedish older population in other distinct ways (e.g. in terms of personality). Thus, it needs to be examined if our findings generalize to other settings and countries.

As we examined different sub-samples, focused on different outcomes, and applied different retirement definitions, depending on the research question (Denton & Spencer, 2009; Ekerdt & de Viney, 1990), the results of the single studies are not easy to compare.

Another limitation of the current thesis is its main focus on individual experiences of retirement, which tends to neglect possible effects and changes in social (in)equalities. In a recent paper, we compared the effect of retirement on social (in-) equality to a lens (Figure 14; König et al., 2018). In that sense, retirement can either work as a concave lens, increasing existing differences. The possession of important resources facilitates retirement adjustment and

can therefore strengthen existing differences in psychological health (cumulative advantage/ disadvantage theorem, DiPrete & Eirich, 2006). On the other hand, retirement may also act as a convex lens, decreasing existing differences, if it for example leads to advantages for those with a low social status (Wetzel & Mahne, 2016).

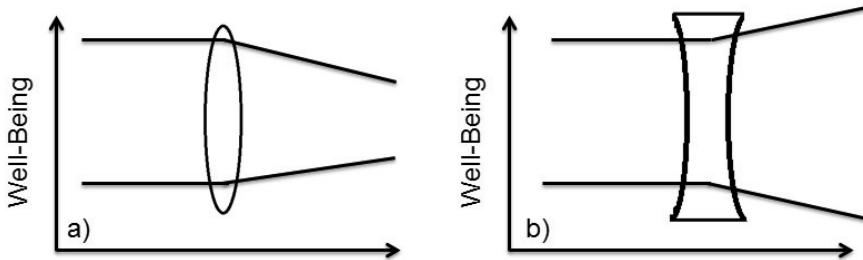


Figure 14. Retirement as a convex/converging (a) or concave/diverging (b) lens.
Note. Adapted from: “Retirement as a lens for social inequalities in cognition and well-being”, by S.König, G.Henning, M.Lindwall, & B. Johansson, 2018.

One important marker for social inequalities is education (Wetzel et al., 2016). Our cross-sectional results showed that the advantages of highly educated individuals in well-being, compared to lower educated individuals, were stronger in the group of retirees than in workers (König et al., 2018). Gender represents another important variable in this respect (Kubicek et al., 2011; Quick & Moen, 1998), given gender-specific work life histories and retirement timing (Dingemans & Möhring, 2019; König, 2017). We therefore included gender and education as covariates in our models. However, as risk and protective factors most likely differ between groups, it can also be informative to investigate the adjustment process separately for men and women (Kubicek et al., 2011) as well as for those with higher and lower education.

In our analyses, we mainly focused on pre-retirement predictors of change, without testing the proposed longitudinal mechanisms directly. According to Wang et al. (2011), changes in psychological health across retirement mainly relate to resource changes, which affect need satisfaction. Advanced mediation analyses could perhaps inform us better if resource changes affect well-being via changes in need satisfaction. They could also show whether specific resource changes are responsible for the observed effects of personality, leisure activity and work motivation.

Anticipatory processes were not considered in our studies, although adaptive actions are likely to occur long before the actual retirement event. Older adults approaching the expected retirement age plan and prepare for life in retirement (Adams & Rau, 2011; Yeung, 2013). They may, if possible, deliberately and gradually withdraw from certain work life obligations and instead

turn their priorities towards other life areas (Damman, Henkens, & Kalmijn, 2013).

Finally, some important factors in the retirement adjustment process have been neglected. These include the individual reasons for retirement: Although we know that a more forced and involuntary exit leading to adjustment problems (Hershey & Henkens, 2014), only study IV included control over retirement. Similarly, work demands and work conditions have only been considered using very general markers (work motivation in study II; work satisfaction and physical work demands in study IV), although understanding which work environment people leave can improve our understanding of retirement adjustment (van den Boogard, Henkens, & Kalmijn, 2016). In addition, the individual social network and social embeddedness can play an important role in the decision to retire (Zaniboni, Sarchielli, & Fraccaroli, 2010), the perception of retirement (van Solinge & Henkens, 2007), and retirement adjustment (Hansson et al., 2017), and have rarely been considered in the thesis.

There are certain specific limitations in each study worth addressing. In study I, we did not investigate the specific characteristics among the “undercontrollers” that may have accounted for the negative effect of retirement in this group. In addition, we only investigated pre-retirement personality, as data on post-retirement personality was only available for a smaller sub-sample. Recent studies have found evidence for change in personality after retirement (Schwaba & Bleidorn, 2018; Specht, Egloff, & Schmuckle, 2011) and these changes and changes in psychological health might exert bidirectional longitudinal effects. Furthermore, we only included two waves of data in the analyses, which makes us unaware of long-term effects.

Study II also lacks such long-term data, which would have helped us to investigate whether work motivation also changes when approaching and anticipating retirement. Furthermore, we only included people who started to take out pensions between waves, which means that we lack a control group of workers. Another problem of study II is the non-optimal reliability of some of the measures, and our use of only two-item scales. Finally, study II may have benefited from considering individual reasons for continuing to work, as multidimensional work motivation may differ between people continuing to work to stay engaged, compared to people working in retirement because of financial necessity.

In study III, we used four waves of data. An even longer time span would probably allow an even better insight in the short- and long-term development of the strength of the association of need satisfaction and well-being (see e.g. Böger & Huxhold, 2018 for a comparable approach). Notably, we lack data on the subjective importance of the three needs and personal goals, which would have allowed for a more direct test of the proposed adaptation processes.

In study IV, we did not include a comparison group of non-retiring participants. Furthermore, our categorization of some activities as predominantly social, physical or intellectual is somewhat arbitrary. For example, team sports constitute both a social and a physical activity, which demonstrates the challenges in defining the character of a specific activity, and how to best aggregate various activities.

3.5 Future Directions and Conclusion

From my perspective, I see four lines of particular interest for future investigations of “the psychology of retirement adjustment”

First, we need more studies that deal with the way individuals actually adjust to retirement, either by changing the post-retirement environment to satisfy their needs, or by adjusting their standards, priorities and goals in line with available post-retirement resources. Adaptation to retirement has rarely been investigated from a life span psychological perspective taking such processes into account (Löckenhoff, 2012). Most likely, there are also interindividual differences in the degree to which adjustment processes are (mal-) adaptive. For example, the need for lifestyle changes in retirement might depend on the prior work environment, given that people are believed to strive to maintain continuity in important inner and external characteristics (Atchley, 1971). Activities may be chosen based on the individual personality (Lu & Hu, 2005), and on the needs people want to be satisfied. From a person-environment fit perspective, personality may moderate the effect of particular social interactions in retirement (Mueller et al., 2019), which means that not all retirees benefit from social activities in the same way.

Second, future work needs to better disentangle pre-retirement anticipatory development, as well as short- and long-term adaptation (Merz, 2018). Micro-longitudinal data could shed light on changes over short periods (e.g. in the first weeks before and the first weeks after retirement). Long-term data would allow investigating whether and how adaptation around retirement is associated with (cognitive) health later in life (Grotz et al., 2016). The within-person variability of psychological health (see e.g. Kuppens, van Mechelen, Nezlek, Dossche, & Timmermans, 2007) might also play a strong role, as some people will be more stable in how well they feel adjusted to retirement, whereas others could display a larger variability in their perceived adjustment and emotional states from day to day. Such patterns can only be captured with burst-designs.

Third, human development is always embedded in a specific cultural and historical context (Baltes et al., 2006). This context has seldom been thoroughly investigated in the literature on retirement adjustment. Few studies have systematically compared retirement adjustment (Fouquereau et al., 2005) or post-retirement health (de Breij & Deeg, 2018) across countries. Projects such as the international IALSA consortium (Hofer & Piccinin, 2009), which harmonizes international longitudinal datasets on aging, or the Survey of Health, Aging and Retirement in Europe (SHARE; Börsch-Supan, Hank, & Jürges, 2005), which offers longitudinal data from several European countries, can facilitate such analyses. With regard to the historical context, recent studies

showing cohort differences in level and change in different facets of (psychological) health in older age (Gerstorf et al., 2015; Hülür et al., 2015; 2016) imply that trajectories of psychological health around retirement may have changed over the last decades as well. This may have two main reasons: First, retirees nowadays retire under different sociocultural conditions than earlier cohorts. Among other external factors, the political shift from early retirement to late exit, resulting in an increase in retirement age in many countries (Hofäcker et al., 2019), changing work conditions (Burke, & Ng, 2006) as well as the de-standardization of working life trajectories (Calvo, Madero-Cabib, & Staudinger, 2018) may shape the context of retirement and thus individual transition experiences. Second, current retirees may differ in important resources from earlier-born retirees, including education (Schaie, Willis, & Pennak, 2015), health (König et al., 2018), mastery (Drewelies, Deeg, Huisman, & Gerstorf, 2018), cognitive functioning (Gerstorf et al., 2015), social networks (Suanet & Huxhold, 2018), and views on aging (Beyer et al., 2017). Long-term surveys such as the German Socioeconomic Panel (Siedler et al., 2009) might allow for the investigation of such effects.

Finally, the presented studies were embedded in different research frameworks (e.g. study I in the Big Five - personality framework, studies II and II in the self-determination theory framework), and based on specific theories, which is common in research on retirement adjustment. These different backgrounds are needed to do the complexity of the adjustment process justice, but they also constitute a challenge for comparing and integrating results of different studies. As mentioned in the introduction, the resource-based dynamic perspective has been proposed as an integrative perspective (Wang et al., 2011). In this model, changes in resources influence need satisfaction, which in turn influences general adjustment. Unfortunately, the model is not well suited to integrate findings such as the potential reprioritization found in study III. Adjustment strategies and behavior are missing in the model. Future conceptual papers may try to combine the resource-based model with psychological adjustment approaches such as the two-process model of coping (Brandtstädter & Renner, 1990). In such a model, experienced or expected resource changes may result in (assimilative or accommodative) adjustment behavior, which may either restrict the actual resource change, influence its effect on need satisfaction, or influence the effect of need satisfaction on adjustment (See Figure 15). Internal and external factors could influence not only experienced resource changes, but also the individual opportunity to counteract such changes.

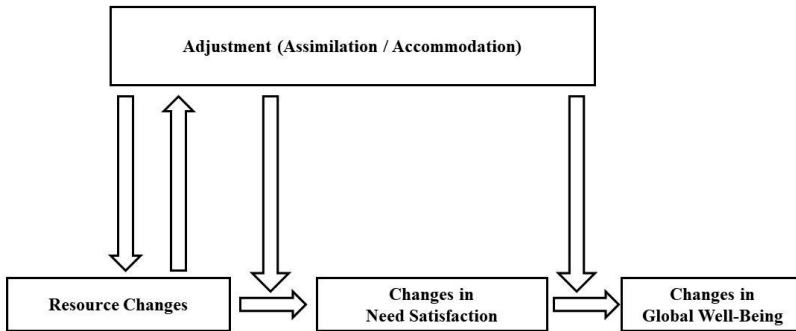


Figure 15. Adjustment behavior in the retirement process.

The present thesis has shown that retirement adjustment is a multidimensional and multidirectional process, and that there is a considerable heterogeneity in change in psychological health across retirement. Understanding this heterogeneity is one of the core tasks in retirement adjustment research. In the current thesis, I have emphasized the importance of personality, pre-retirement work and non-work life experiences, as well as post-retirement adjustment processes. Personality and pre-retirement work motivation predict interindividual differences in change in psychological health across retirement. Assimilative and accommodative post-retirement adaptation processes also seem to play a role, but their adaptive values are not fully understood yet and should be in focus of future studies.

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