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Why are middle-aged people so depressed? Evidence from West Germany

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Abstract Does happiness vary with age? The evidence is inconclusive. Some studies show happiness to increase with age (Diener et al. 1999; Argyle 2001). Others hold that the association is U-shaped with either highest depression rates (Mroczek and Christian, 1998; Blanchflower and Oswald, 2008) or highest happiness levels occurring during middle age (Easterlin, 2006).

Current studies suffer from two shortcomings. Firstly, they do not control for three confounding time variables: age, period and cohort effects. Secondly, all empirical research lacks a theoretical explanation as to why age affects happiness. The purpose of our analysis is to contribute to closing both of these research gaps.

A social investment model frames the dynamics of happiness across the life-span. The empirical test draws on West German panel data that followed individuals from 1984 to 2005. Descriptive analysis shows a cubic age function with the lowest level at middle age. However, hierarchical three-level variance component models (Rabe-Hesketh and Skrondal, 2005), find significant differences across pre-war and post-war cohorts, baby boomers and offspring of the baby bust as well as deviations during reunification. Yet, cohort and period effects account for less than 10% of the variance. (Un)happiness in midlife is more strongly determined by gender-specific occasional influences and individual characteristics. Both define objective and subjective returns of professional and personal life investments. These social investment decisions date back to early adulthood and bear a high risk of failure during midlife. Unforeseen consequences and long-term private and professional commitments make it costly to adjust, but at the same time new investments may pay off in a pro-longed future. This dilemma turns many middle-aged people into “frustrated achievers”.

1 Introduction

Research on the effects of age on happiness has produced mixed results. Argyle (2001), Diener et al. (1999) and Myers (Myers, 1992) claim that happiness increases slightly with age. By contrast, more recent studies detect a U-shaped association. Many researchers find the lowest level of happiness around the age of 40 (Mroczek and Christian, 1998; Blanchflower and Oswald, 2008). Others, such as like Easterlin (2006), claim that happiness is at its highest around this age.

Standard determinants and mechanisms of happiness like income (Clark et al. 2008; Easterlin, 2001) and social support (Haller and Hadler, 2006), adaptation processes (Frederick and Loewenstein, 1999), and the balance between aspiration and attainments (Plagnol and Easterlin, 2008), can explain any of these outcomes.

Aging can be a happy experience if people adapt to biological changes (Baltes and Baltes, 1990). Also, wealth accumulates with age (Land and Russell, 1996). Yet, income is highest (Modigliani and Brumberg, 1954; Mincer 1974; Alessie et al. 1997) and social networks (Glaeser et al. 2002; Hill and Dunbar 2003) are largest during middle age. Both factors may boost happiness during this phase in life if men and women in their middle ages can balance professional and private requirements and adjust their aspirations to the realities of life. If not, they may turn out to be quite unhappy.

In this paper we argue that mixed empirical findings and over-determined explanations of how age affects happiness result from omitted timing processes. This is because these studies neither develop an age-specific theory of happiness nor do they account for both confounding period and cohort influences at the same time. Age, period, and cohort influences are not easy to identify since they are linearly dependent. Still, longitudinal analysis in demography and life course research has demonstrated how to prove the significance of all three factors (Hobcraft et al. 1982). Most recently, Yang (Yang, 2008; Yang, 2008) carried an APC-analysis forward on happiness research. She confirmed age, synthetic cohort and period effects for the US population but she did not theoretically elaborate on the dynamics of happiness.

We have extended the analysis in three ways. Firstly, we develop a rationale as to why middle-aged people are less happy than younger and older people. Secondly, we use individual level panel data to disentangle manifold psychological and social influences from

timing effects. Thirdly, we apply the analysis to real cohorts and pre-unification and post-unification West Germany.

The rest of the paper is divided into six sections. In section 2, we review relevant literature on happiness, midlife and life course research from psychology, economics and sociology. On this sound footing, we have derived seven hypotheses which frame the dynamics of happiness across life-time but particularly around midlife (section 3). We introduce the panel data (section 4) and explain the multi-level mixed-effects model applied (section 5). Findings and results are summarized in section 6. We conclude with a discussion of the theoretical and empirical implication of our findings (section 7).

2 Dynamics during Midlife

2.1 Psychological Insights

Unlike young and old age, middle age has rarely been conceptualized as a transitional period in research. On the contrary, people in their 30s to 50s appeared to have reached a matured, stable personality with aligned realistic aspirations and significantly lower suicide and depression rates than in young or old age (Costa and McCrae, 1990; Mirowsky and Ross, 1992; Rübenach, 2007). Even midlife psychologists state that "the popular notion of a 'midlife crisis' as a normative developmental experience" has been "overdramatized" (Reid and Willis 1999, 277). Instead, middle-aged men and women set the benchmark for the analysis of social status and productivity (Lachman, 2004). As the 'generation in command' (Neugarten, 1968), their well-being seems to depend on personal, social and economic categories, not on age.

Early research by psychologists shows that individual variance in subjective well-being is stable across situations (Diener and Larsen, 1984) and across the life-span (Costa and McCrae, 1980). They centered their explanations on personality characteristics (Tellegen et al. 1988; Lykken, 1999), since extraversion and neuroticism correlate well with positive and negative effects, and predicted overall happiness over a period of up to ten years (Costa and McCrae, 1980; Headey and Wearing, 1992). Other traits show weaker correlations. Set-point theory explains the connection between personality and SWB (Diener and Lucas, 1999) with fixed genetic dispositions. Thus, well-being during middle age should not systematically and persistently change.

However, more recent findings cast doubts on the stability assumption of this theory and its manifold derivatives (see also Headey 2009). For example, recent genetic research identified epigenetic mechanisms and reprogramming which prove the importance of exogenous influences on gene expression in somatic cells that contain virtually all of the same DNA content (Strachan and Read, 2004, 294). These mechanisms may explain why heritability estimates of personality traits account for only 50% of the variance (Plomin and Caspi, 2001), why some personality and intelligence factors are found to increase with age (McCartney et al. 1990) and why stressful life events were much more likely to result in the diagnosis of depression if a person possessed a shorter version of the 5-HTTLPR gene (Caspi et al. 2003). All these studies reveal that genetic expression does not only depend on DNA sequence. Accordingly, personal genetic disposition may never be expressed, or may systematically change with new environmental influences.

Longitudinal psychological studies further specify how social influences, particularly in the domain of love and labor, alter personality traits that correlate with SWB. For example, occupational success has been found to increase dominance and to decrease negative emotionality (Roberts et al. 2003). Living in tense, dissatisfying, and abusing relationships increases neuroticism (Roberts and Chapman 2000; Robins et al. 2002).

Given these findings, frustrating experiences which typically occur during midlife (e.g. professional stagnation or a professional set-back, a boring marriage, teenage kids etc.) may elicit depressive personality traits. A social investment perspective can be put forward to integrate these tight interactions between individual dispositions and environmental conditions. Roberts et al. (Roberts et al. 2005, 173) claim that “investing in social institutions, such as age-graded social roles, is one of the driving mechanisms of personality development.”

Young age as an institution supports individuals in building a career and social relationships by protecting costly long-term investments. Responsibilities are limited, faults are tolerated and flexibility is expected early in life. Also from an evolutionary perspective, costly long-term investments in social relationships are advantageous and have materialized in a complex memory system with specific cognitive, affective and neuro-hormonal characteristics (Brown and Brown 2006).

Consequently, long-term investments should pay off. However, some psychologists have shown that people have a difficult time in predicting their future utility (Gilbert et al. 2002; Loewenstein et al. 2003; Gilbert, 2006). Institutions might help, but institutions are both enabling and constraining at the same time. Norms raise expectations (Frederick and Loewenstein, 1999) and sanction deviations (Berger and Luckmann, 1966). Without

specifying social benchmarks, the social investment concept remains inconclusive as to whether SWB increases or declines during midlife.

2.2 Economic and Sociological Insights

From the outset economists and sociologists have factored in psychological premises of well-being despite their research focus on social determinants of SWB. Already in 1974, Easterlin demonstrated that income and wealth, the benchmarks for social ranking during midlife, do not increase people's happiness (Easterlin, 1974), since people are trapped in a "hedonic treadmill" of rising subjective aspirations. More recent studies find mixed results, on the level of individual income as well as on the level of national wealth (Di Tella et al. 2003; Alesina et al. 2004; Frijters et al. 2004; Dynan and Ravina, 2007; Clark et al. 2008). Yet, there is little dispute that poverty marks an important objective threshold below which income seems to be decisive.

Longitudinal data also reveals that unemployment lowers SWB independent of the associated income loss (Lucas et al. 2004). This negative effect lasts even longer than the respective unemployment spell. If repeated spells of unemployment cumulate in midlife, they have a permanent impact on the individual well-being set-point (Clark et al. 2001).

Sociologists also find that people do not adapt to social relationships with friends and partners. Generally, being married is associated with an increased level of well-being (Myers, 1999). However, a detailed analysis of marital trajectories shows that this advantage is not stable over time (Waite et al. 2009). Zimmermann and Easterlin (Zimmermann and Easterlin, 2006) detect a significant honeymoon effect immediately after marriage, followed by a sharp decline, and a later recovery above the pre-marital set-point. The downside of this happiness-trajectory is defined by the highest divorce rates during midlife which also implies high poverty risks for women in Germany (Bundesministerium, 2009).

A closer look at daily trajectories shows that SWB also varies significantly during the day (Kahneman et al. 2004). Real-time measures, in which respondents instantaneously evaluate their happiness or construct their daily happiness in short time intervals, demonstrate that caring for children and commuting to work lowers subjective well-being, meeting with friends increases it, although children and real estate property rank high on people's major goals in life. Similarly, the general conception that men and, particularly women; should balance a satisfying career and private life often puts an excessive demand on their resources

during midlife and implies a “second shift” in their everyday life (Hochschild and Machung, 2003).

These inconsistencies between long and short-term utility can be explained by a focusing illusion (Kahneman et al. 2006). People tend to focus on immediate experiences and relevant social others (Veenhoven, 1991). However, myopic judgments tend to result in adverse decisions and investments in the course of time, but if and how much they affect people later in midlife depends largely on the private and professional investments of their reference group.

The modern welfare state has produced a secured, age-stratified and gendered life course (Mayer and Schöpflin, 1989). Relevant others oftentimes belong to the same-sex (birth) cohorts since early socialization, educational institutions and many professional careers center on the size and the relative age within birth cohorts (Easterlin, 1978; Goodman et al. 2003; Gladwell, 2008).

Yang (Yang, 2008) demonstrates that cohort effects have had a significant impact on the SWB of US Americans during the last three decades. In the case of the middle-aged, we suspect that it is primarily the size of cohorts that is most important since they have to compete on two markets at the same time: on the labor market and on the (re)marriage market.

Moreover, the middle-aged would also be affected by periodic, large-scale social changes. Economic growth, the rapid expansion of the welfare state (Flora, 1986), and the accelerated prolongation of the life course (Oeppen and Vaupel, 2002) since the 1950s objectively improve life at middle age. Higher incomes, expanding social security budgets, and a steadily rising, albeit gender-specific, probability to survive until old age should dispel economic and future worries, and should increase the happiness of the middle-aged. Hence, international comparisons generally show higher SWB in richer countries with advanced welfare states (Veenhoven and Hagerty, 2006; Inglehart et al. 2008; Veenhoven, 2009).

But high security standards, highly standardized age norms and long time horizons promoted by the welfare state (Mayer und Schöpflin, 1989) also put the middle-aged subjectively under particular pressure to do the “right” thing, though hardly to project long-term investments at the “right” time, whereas missed chances are difficult to compensate for later in life.

In addition, there is variation between countries of the same stage of development. For example, the falling happiness in transition economies is explained by rising insecurity and the stark distortion of income distribution during the transition phase, which turns more middle-

aged people into relative losers or “frustrated achievers” (Graham and Pettinatio, 2001; Brockmann et al. 2009).

Similarly, the fall of the Berlin Wall and Germany’s reunification was an emotional national event. It resulted from the first peaceful revolution on German soil and freed millions of people. However, happy feelings turned sour when Germans began to realize the unforeseen consequences of this transition. Middle-aged East Germans suffered from both a dramatically shrinking labor market and their new West German reference group (Diewald et al. 1996). As taxpayers, middle-aged West Germans had to bear the high follow-up costs of the transformation, including a long-lasting recession.

In a nutshell, subjective well-being rests on the dynamic interplay of both endowment and environment. Social investment theory explains why and which factors have an impact on SWB. A longer, age-stratified and gendered life course as an institution (Mayer, 2009) demands and secures costly long-term individual investments which turns the 30 to 60 year olds into the most productive and reproductive age group. Their happiness depends particularly on relative labor and marriage market success, which, however, men and women weigh differently. Competitors stem mostly from the same-sex (birth) cohort, but, changing (market, state) environments and changing standards of comparison increase the stochastic risk of failure, particularly of long-term investments. Consequences become difficult to foresee. For this reason, the middle-aged often end up as “frustrated achievers”.

3 Hypotheses

Against this background, the following hypotheses are tested:

H1. Subjective well-being follows a curvilinear age trajectory over the individual life course. Happiness is lowest during midlife.

H2. Happiness trajectories differ for men and women.

H3. Cohort effects significantly impact SWB. The larger the cohort, the lower the SWB of individuals is.

H4. A periodic event, such as like reunification, has a sudden effect on SWB, but attenuates over time and particularly among the middle-aged.

H5. Social inequalities are more important during midlife than during any other phase in life.

H6. The loss of a job or a life-time partner affects the middle-aged more than younger or older groups.

H7. SWB during midlife is more greatly affected by future expectations and economic worries than by personal traits.

4 Data

Our analysis is based on an unbalanced nationally represented sample of West Germans, who are part of the German Socio-Economic Panel Study (Wagner et al. 2007; Wagner et al. 2008). We have used all waves from 1984 until 2005 to reconstruct individual trajectories of subjective well-being. Overall, 6,568 men and 7,038 women, or 146,977 person-years, are included in our analysis. The mean age is 45 years, 8,645 respondents are between 30 to 60 years old.

The dependent variable is measured yearly with the standard question: "How satisfied are you with your life, all things considered?" Answers range from 0 ("completely dissatisfied") to 10 ("completely satisfied"). In order to back up the causal connection, the dependent variable has been surveyed one or five years after the explanatory variables. SWB will be explained by pre-war and post-war cohorts, baby-boomers, and baby-busters, size of the cohort, employment status, education, household income, personal living circumstances, number of children, hours of housework, religious affiliation, immediate marital dissolution through divorce or widowhood during the previous panel wave, and individual perceptions of the future, the economy and oneself. The latter personality measure results from a factor analysis based on 31 standard personality questions which were asked in 2005 (Gerlitz and Schupp, 2005). Items concerning personal qualities, personal statements and attitudes towards life and the future were answered on a seven-point scale where 1 meant "disagree completely" and 7 "agree completely". We included the first factor into our analysis since it measures a positive self-perception or self-confidence and explains 43 % of the overall variance. Further sample statistics are displayed in Table 1.

[Table 1 about here]

5 Models

The various processes that have an impact on midlife happiness occur on different levels of aggregation. According to the theoretical insights, their impact is not fixed across time but changes randomly. Hierarchical three-level models (Rabe-Hesketh, and Skrondal, 2005) embed repeated individual measurement occasions (i) in personal clusters (j) and in cohort superclusters (k) with a variable periodic influence during the reunification phase. With this variance components model we are able to disentangle fixed age and occasional and individual influences from random personal, cohort, and period processes. We delineate age, period and cohort effects with a non-linear transformation of the age variable, with different cohort and period groupings (Fienberg, Mason, 1985; Yang, 2008) and by separating a random cohort intercept from a periodic random coefficient.

Formally, the single levels of these mixed models can be written as follows:

Level 1 $$y_{ijk} = \eta_{jk} + \beta_a x_{ijk} + \varepsilon_{ijk}$$

where the intercept η_{jk} varies between subjects j and cohorts k. Here $\left(x_{ijk}\right)$ is a vector containing all covariates with $\alpha = 1,...,29$ and $\varepsilon_{ijk} \sim N(0,\theta)$. The intercept η_{jk} is further modeled on level 2.

Level 2 $$\eta_{jk} = \pi_k + \varsigma_{jk}^{(2)}$$

n

π_k is the intercept and $\zeta_{jk}^{(2)}$ is a random effect ~N(0,ϕ). The level-3 model specifies for this intercept π_k:

Level 3 $$\pi_k = \beta_1 + \zeta_k^{(3)} + \delta_k^{(3)} r_k + \chi_k^{(3)} s_k$$

with a constant β_1, n$\varsigma_k^{(3)} \sim N(0,\psi)$, r_k representing the pre-and post-reunification period and s_k standing for the centered cohort size. Substituting the level-3 expression for π_k into the level-2 model and exchanging then η_{jk} in model 1 gives us

$$y_{ijk} = \beta_1 + \beta_\alpha x_{ijk} + \zeta_{jk}^{(2)} + \zeta_k^{(3)} + \delta_k r_k + \chi_k s_k + \varepsilon_{ijk}$$

We calculated maximum likelihood estimators with STATA 9. The model fit rests on the likelihood-ratio χ^2 test.

6 Results

6.1 A Cubic Age Function

Descriptive age trajectories of happiness follow a non-linear distribution. During the first decades of life, men and women experience a similar development of SWB. Levels drop sharply from the ages of 16 to 20. Thereafter, values continue to decline at a lower rate and reach their lowest levels during the early fifties. Men hit rock bottom at the age of 52 (6.8) and women at the age of 55 (6.7). However, after this midlife low point SWB bounces back. The recovery is steeper for men than for women. On average, at the age of 72, men experience the same satisfaction with their life as a 20 year old. Older women reach another peak at age 62, but their level of happiness remains lower throughout their remaining years.

[Figure 1 about here]

6.2 Life Cycle Dynamics - The Happy Interplay of Timing, Endowment and Environment

What appears as life-time devolution may be an artifact in reality. The connection between age and happiness displayed is affected by cohort and period, by individually endowed and socially experienced influences. The following models disentangle the simultaneously

operating processes and detect, in contrast to previous findings (Easterlin, 2n006; Blanchflower and Oswald, 2008), a cubic-shaped age function. Aging has less of an impact on happiness than bivariate findings suggest. Also, when controlling for cohort and period influences, women generally tend to be as happy as men until they turn 40, but are considerably unhappier afterwards. The supposed "recovery" of middle-aged women disappears if we statistically control for confounding cohort and period influences. However, the differences are not significant on a single year basis.

[Figure 2 about here]

The random part of Model 1 in Table 2 shows that the standard deviation between cohorts is significant and estimated as 0.49 on our 10-point happiness scale for men and 0.47 for women. Differences in SWB between pre-war and postwar cohorts, baby-boomers and baby-busters account for 7% of the overall variance. Yet, contrasting only the West German baby-boomers against other cohorts does not provide significant results against our expectations (H2) (not displayed). When allowing for a random slope on the reunification period, significantly larger variances are detected during this time (H3). However, compared to the variance between individuals (41%), the explanatory power is very small (1%).

[Table 2 about here]

Therefore, in the following models we focus on occasional and individual level influences and subsequently compare the total population with the middle-aged. Firstly, in Model 2 we include standard socio-economic characteristics which reflect on the life investments people have made in terms of careers, private living circumstances, and physical and mental health. Gender differences are striking (H1).

In the overall population, men's happiness is significantly dependent on employment status. Compared to those who are not employed, nearly any other employment status makes men happier, higher ranked positions do in particular. Also, job security plays an important

role. Working as a civil servant, irrespective of the individual career track, increases men's happiness by 0.32. This is more than any other employment status can do.

In contrast, West German women report no significant emotional benefit from any engagement in the labor market. Yet, they are happier if they stay in education for longer even though the effect is smaller than for men. However, household income matters more to them. An increase in the net household income of 1,000 Euros will significantly lift their SWB on a 10-point scale by 1.6 (men by 1.5).

In today's Western societies, private living circumstances result from individual decisions, which can be perceived as investments in social relationships. Thus, there is a large amount of variation across the life-span. We look at various household constellations and find significantly lower life satisfaction for men compared to a 1-person household when living as a single parent (-0.22), in a multiple generation household (-0.20) and together with a partner and older children (-0.11). For women any household constellation apart from living alone leads to a significantly lower SWB. Moreover, a higher number of children significantly decreases women's and men's happiness. This thought-provoking appraisal does not result from the daily work load of parents, since spending more hours on housework and shopping, increases women's happiness but lowers men's.

However, investments in physical and mental health pay off. Both the satisfaction with one's health and being a member of the church raise the overall satisfaction with one's life among men and women significantly and confirm well-established previous findings (Helliwell and Putnam, 2004; Borgonovi, 2008; Hadjar et al. 2008; Robinson and Martin, 2008).

Life investments, though, are always at risk of failure. Unintended and unexpected events may threaten people's SWB. In Model 3 we include the event of having been unemployed in the previous year and get a highly significant negative effect. The experience of losing a job affects men stronger than women and absorbs some of the influence employment status has on men's SWB. For women, a recent separation from a partner has a significant and more negative impact on their life satisfaction than it does for men. But the difference between the sexes is small and it does not change the impact of their current living circumstances on SWB.

In Model 4, the perspective is broadened. We add personality traits, individual perceptions and cohort size and see strong influences on individual life investments and on people's happiness. Assuming that personality traits are endowed genetically or through early environmental experiences, we include self-confidence, a factor which came out of a battery

of 31 personality items, and saw that it positively influences men's and women's SWB significantly.

In addition, future expectations and worries irrespective of objective living circumstances, define perceptional characteristics of a person. Both indicators revealed strong effects on happiness. Moving on a four-point scale towards the pessimistic pole always decreases men's and women's SWB significantly by nearly one unit on the happiness scale. Pessimistic prospects outweigh previous unemployment phases even by more than 4 (men) to 6 (women) times. Economic worries undermine happiness in the same way. The more people fear future losses, the lower they rate their SWB in the coming year. These material fears also have a stronger effect on women's happiness (only a slightly weaker effect for men) than recently experienced unemployment has.

An objective indication for subjective projections into the future may be the size of the birth cohort due to the fact that individuals have cumulated experiences about their same-aged competitors since early in life and can assume to do so in the future. Adding a cohort size effect on the occasional and on the cohort level revealed significant effects. As hypothesized (H 3), a larger number of same-aged competitors lower men's and women's SWB significantly. This fixed effect absorbs some of the cohort variance but also leads to deviations between pre-war and post-war cohorts, baby-boomers and baby-busters.

Overall, the significantly declining log likelihood between models confirms the necessity to understand the dynamics of SWB as a gender-specific interplay of timing, environmental and personal factors. Figure 3 illustrates how these influences finally alter the age trajectories of happiness. Mere aging hardly affects women's happiness but steadily lowers men's. Also, women always remain happier when they age than men.

[Figure 3 about here]

6.3 Midlife Unhappiness

Are these dynamics of happiness stable over the entire life cycle, or do they differ during midlife? In order to answer this question we reran the models for the population of 30 to 60 year olds and tested the predictive power of our model.

[Table 3 about here]

Replication of Model 4 among the middle-aged population reveals different age effects. Men's SWB increases with age, while women's SWB is not at all affected by aging. The overall model attests a significant interaction of age and gender, which verifies our first hypothesis. However, period and cohort influences retain their impact for both sexes during midlife. In addition, the size of the cohort remains significant for both sexes and irrespective of the birth cohort in the overall model. We therefore dropped the size effect from the cohort level in the smaller gender-specific models.

Model 4 also shows that job hierarchies and job security matter more to middle-aged men than younger and older groups of the population. The largest difference in SWB for men results from being employed as a civil servant (0.2) with no risk of unemployment (H4). However, being in education does not have any more impact on men's SWB but it has a significant and negative influence on women's happiness during midlife. Otherwise, and quite surprisingly, these women are indifferent to any higher ranked or secure job as well as to any private living circumstances. Only the effect of managerial and professional jobs is significantly different between men and women.

Daily hours of housework and shopping forfeit their positive effect during midlife, and even significantly affect men's happiness in a negative way. Similarly, unemployment retains its significant, larger negative impact on men's SWB during midlife than on women's, although middle-aged women suffer more from unemployment than younger and older women do. Also, other determinants preserve their significant influence during midlife, effect sizes vary slightly.

How robust and persistent are these dynamics? In order to see if future expectations, contemporary experiences, labor market positions, and family status as well as age, period and cohort effects also have an impact on middle-aged people's happiness after 5 years.

Model 5 shows that age and period factors lose their relevance over time, while cohort size and cohort level preserve their impact on people's happiness. Please note that the cohort size has been differently coded in order to balance the unequal representation of cohorts in our middle-aged sample. At this stage of the analysis, we can only speculate about the importance of cohort competition and comparison e.g. on labor or marriage markets. However, a direct test of cohort dynamics during midlife is beyond the scope of this paper.

The fixed part of Model 5 adds further changes to the determinant structure. SWB in five years has a more positive impact if men have a safe job or income (pensioner, civil servants), and if women live in small households and without children. Women's and men's investments in a family do not seem to pay off in West Germany, while men's investments in a secure job do.

7 Discussion

SWB is not stable across the life course. We decomposed timing effects as a chronological background against which people make strategic life investments. Following up on demographic and life course analysis, we distinguish between age effects which indicate biological processes and a shrinking life expectancy, cohort effects that define social reference groups and period influences which capture the historic frame. Our window of observation for period effects was short on a historic scale but it included the dramatic breakdown of the former Eastern Bloc and Germany's reunification in 1990. Birth cohorts allowed us to go further back in time. By comparing pre- and post-war cohorts, baby-boomers and baby busters, we added another meaningful social clock to our analysis. Finally, we applied a flexible age function to grasp biographical turning points in life time.

Based on West German panel data, we have shown that, in contrast to previous findings, SWB follows a gender-specific cubic age trajectory with lowest levels during midlife and late-life. However, influential cohort effects often prevent women from recovering from their midlife 'depression' as men do. Also, reunification boosts happiness for a short time (period effect).

But overall aggregated timing influences on SWB seem limited. Unhappiness during midlife is affected to a greater extent by occasional and individual level influences. Future research will have to prove whether or not the order of magnitude can be generalized. Yet the causes of midlife depression can be only understood from the perspective of an aging individual.

Social inequalities alter the age trajectory of SWB crucially. Midlife happiness mostly results from long-term investments in labor and marriage markets. The analysis also reveals pronounced gender differences, showing that men enjoy job hierarchies and job security while women seem immune to status differentials. Instead, women in their middle ages are sensitive

to household income and unemployment even though unemployment impacts men's SWB more negatively.

It is a well established finding that being single makes people unhappy (Helliwell and Putnam, 2004), but marital status changes over time (Waite et al. 2009). In order to grasp this temporal variance, we account for actual living circumstances and find surprisingly little impact on SWB during midlife.

Two reasons may be important here. First, concrete living circumstances change so quickly that the year between the measurement of then determinants and the measurement of SWB may be too far apart to capture the most recent changes in private life. Second, the effect of marital status is highly population dependent. Declining and postponed marriages, rising divorce rates, and high numbers of childlessness are a widely shared reality nowadays, and not an individual calamity.

Specifically, the missing investment in children does not affect people's happiness. On the contrary, each additional child significantly lowers the SWB of men and middle-aged women in particular. This lack of appreciation of children is in line with most recent findings (Kahneman et al. 2004; Kohler et al. 2005) but is still not explained. Nevertheless, it should give pro-natal family policy makers cause for serious concern.

Long-term investments in children or in a career are likely to fail during midlife. Decisions over time are generally insecure, and early life-time decisions are particularly prone to a focusing illusion biased towards present influences or normative orientations (Loewenstein et al. 2003; Kahneman et al. 2006). The unforeseen and unpleasant consequences of these early choices are most intensely felt during middle age when demanding teenage children terrorize everyday life and career advancements become increasingly unlikely, as potential exits from one's family and job obligations are limited and at a high cost.

Of course, these dilemmas depend strongly on subjective endowments and even more on future expectations. Still, the dynamics of happiness during midlife result from strategic long-term decisions about when, how, and how much to invest in the labor market and in social relationships. Stronger age effects on the happiness of middle-aged men reflect age-segmented rules on labor markets where women are less engaged. Significant birth cohort effects reflect comparative standards that establish a basis for many "frustrated achievers" in middle age.

The findings have a couple of potentially important policy implications. Firstly, policy makers should nudge those middle-aged 'failed investors' to learn from their bad investments.

For this purpose **rigid age regimes** (e.g. in education and on the labor market) need to be negotiated. Secondly, policy makers who aim at gender equality have to address gender differences, particularly male unemployment and female disengagement in high-status professions. Thirdly and finally, the persistent unhappiness of parents and mothers in particular should gain more political attention. Their political representation may need to be improved.

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Table 1. Sample Description

	Men	Women
N	6,568	7,038
Life satisfaction (mean) 0-10 very satisfied)	7.15	7.13
Age (mean)	44.1	46.3
Cohort born < 1930 (‘pre-war’)	1,152	1,650
1930-59 (‘post-war’)	2,781	2,730
1960-69 (‘baby-boom’)	1,560	1,452
>=1970 (‘baby-bust’	1,075	1,206
Employment Status (in person years)		
Not employed	1,055	17,266
Education, Apprenticeship, Military/Civil Service	6,878	5,458
Unemployed	2,695	2,402
Pensioner	12,825	17,501
Worker	15,439	10,060
Forman	3,216	165
Self-employed <=9 employees	3,317	1,461
Self-employed >9 employees	336	48
Professionals, Managerial	15,242	14,171
Civil Service	5,577	2,032
Years in Education (mean)	11.7	11
Household Net Income in € (mean)	3,921	3,620
Satisfaction with Health (mean)		
(0-10 very satisfied)	6.79	6.55
Intimate Living Circumstances		
(in person years)		
1 Person Household	7,475	12,906
Couple w/o Children	21,417	21,733
Single Parent	2,701	4,988
Couple w Children < 16	15,254	15,620
Couple w Children > 16 (or age unknown)	20,248	17,287
Multiple Generation Household	1,479	2,029
Other	1,658	2,175
Number of Children in the Household	0.52	0.52
Daily Hours of Housework and Shopping	0.85	3.27
Church Membership		
Catholic	17,663	20,817
Evangelical	16,957	21,976
Christian Religious Organization	517	741
Other Religious Organization	341	287
Non-Denominational	8,758	5,721
Marital Dissolution (during last year)	717	967
Future Expectations (1-4 pessimistic, mean)	2	2
Economic Worries (1-4 worried, mean)	2.2	2.2

Source: GSOEP 1984-2005, West German sample

Figure 1.

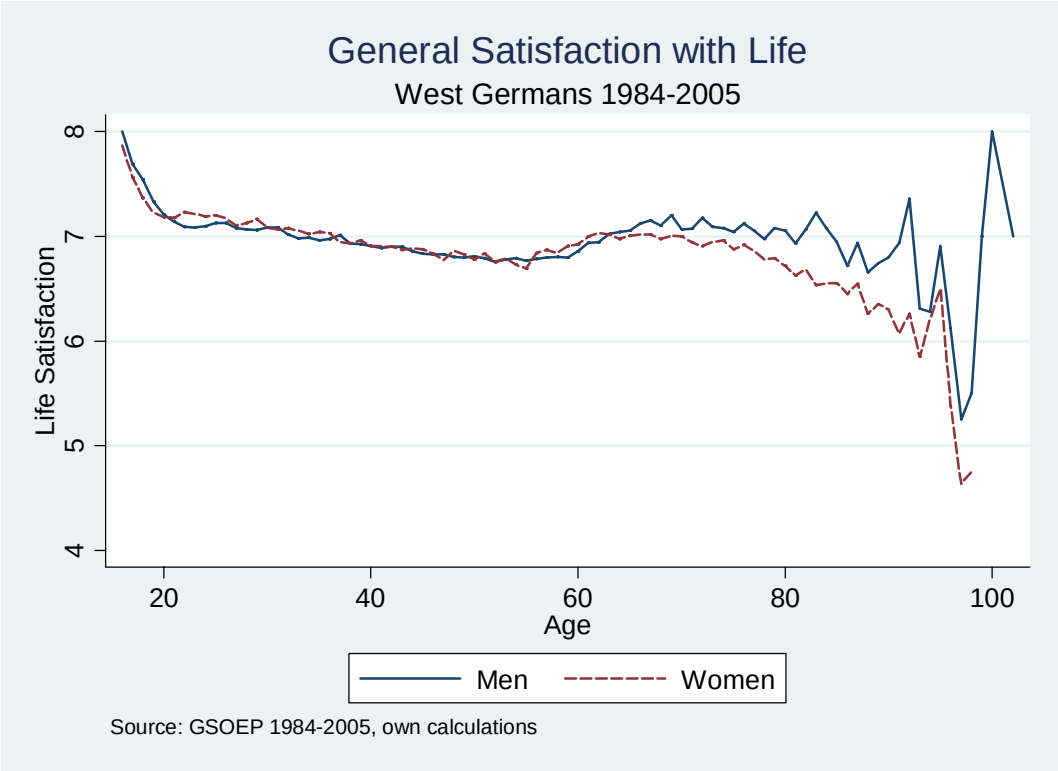

General Satisfaction with Life
West Germans 1984-2005
Life Satisfaction
4
5
6
7
8
20
40
60
80
100
Age
Men
Women
Source: GSOEP 1984-2005, own calculations

Figure 2. Age Trajectories of Happiness Adjusted for Cohort and Period Effects (Table 2, Model 1)

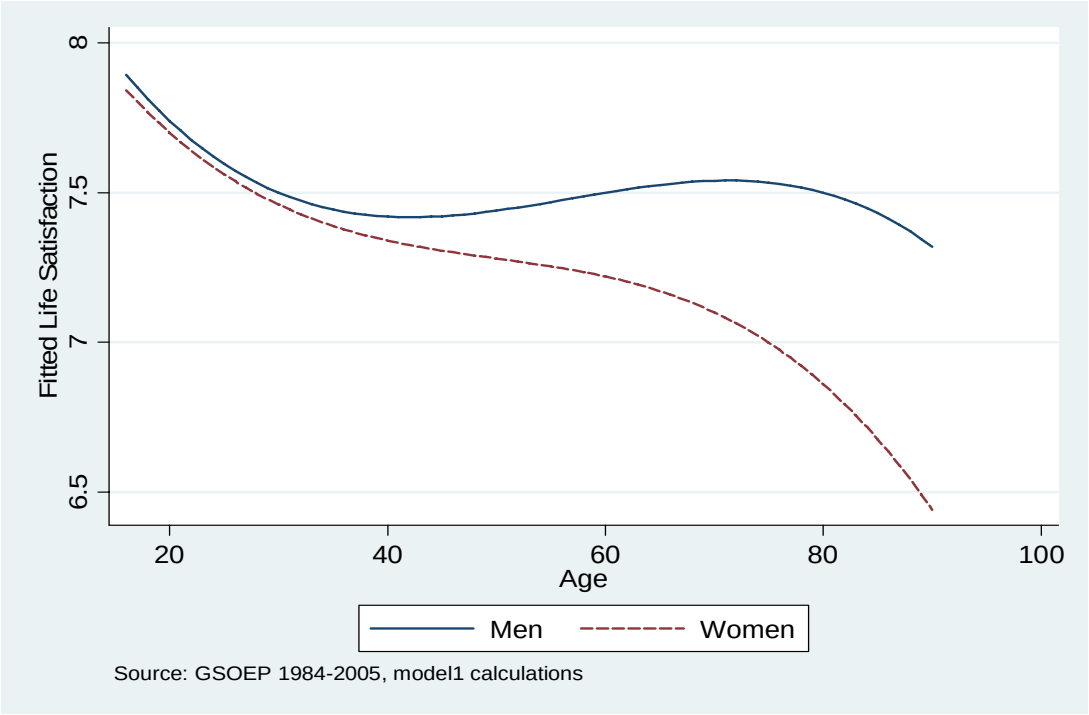


Table 2 Subjective Well-Being Embedded in Timing Effects and Social Environments (happyrevise3)

	Model 1		Model 2		Model 3		Model 4	
	Men	Women	Men	Women	Men	Women	Men	Women
Fixed part								
Age	-0.09***	-0.08***	-0.11***	-0.08***	-0.11***	-0.08***	-0.10***	-0.08***
Age^2 (in 100 Years)	0.17***	0.15***	0.23***	0.15***	0.22***	0.15***	0.21***	0.16***
Age^3 (in 100 Years)	-0.01***	-0.01***	-0.02***	-0.01***	-0.02***	-0.01***	-0.02***	-0.01***
Employment Status								
Reference group: not employed								
Education, Apprenticeship, Military/Civil Service			0.22***	-0.02	0.10**	-0.05+	0.07+	-0.08**
Pensioner			0.18***	0.00	0.07+	-0.02	0.06	-0.01
Worker			0.23***	-0.02	0.10***	-0.05*	0.10**	-0.03
Chief Worker			0.26***	0.06	0.14***	0.02	0.10**	-0.00
Self-employed <=9 employees			0.15***	0.03	0.07+	0.01	0.07+	-0.03
Self-employed >9 employees			0.11	-0.19	0.02	-0.20	-0.04	-0.26

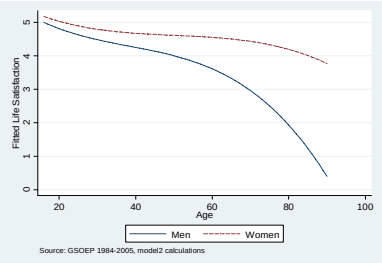
Professionals, Managerial	0.29***	0.05*	0.19***	0.02	0.13***	-0.01
Civil Service	0.32***	-0.02	0.21***	-0.04	0.12**	-0.10
Years in Education	0.10**	0.02**	0.01**	0.02**	0.005	0.01
Log Household Net Income	0.17***	0.20***	0.16***	0.20***	0.10***	0.13***
Living Circumstances						
Reference group: 1-Person Household						
Couple w/o Children	0.05+	-0.1***	0.04	-0.13***	0.06*	-0.10***
Single Parent	-0.22***	-0.29***	-0.22***	-0.28***	-0.16***	-0.22***
Couple w Children < 16	-0.01	-0.26***	-0.03	-0.29***	0.01	-0.25***
Couple w Children > 16 (or age unknown)	-0.11***	-0.26***	-0.12***	-0.29***	-0.05	-0.22***
Multiple Generation Household	-0.20***	-0.32***	-0.2***	-0.34***	-0.13*	-0.27***
Other	-0.08	-0.35***	-0.09+	-0.37***	0.001	-0.30***
Number of Children in the Household	-0.05***	-0.04**	-0.05***	-0.04**	-0.04**	-0.01
Daily Hours of Housework and Shopping	-0.01*	0.01***	-0.01	0.01**	-0.01+	0.01***

Satisfaction with Health			0.15***	0.13***	0.15***	0.13***	0.13***	0.11***
Member of Church			0.21***	0.20***	0.20***	0.20***	0.20***	0.21***
Reference group: non-denominational								
Unemployed					-0.30***	-0.20***	-0.23***	-0.15***
Separated from Partner					-0.26***	-0.33***	-0.25***	-0.31***
Cohort Size (per 100)							-0.15**	-0.17**
Self-Confidence							0.11***	0.09***
Future Expectations (1-4=pessimistic)							-0.88***	-0.96***
Economic Worries							0.21***	0.22***
Constant	8.94***	8.78***	6.25***	6.11***	6.46***	6.21***	9.14***	9.27***
Random part								
Person	1.21***	1.27***	1.01***	1.1***	1.01**	1.10***	0.98***	1.06***
Cohort	0.49**	0.47**	0.44**	0.48**	0.44**	0.48**	0.36*	0.37*
Reunification Period	0.20**	0.21**	0.21**	0.22**	0.21**	0.22**	0.17**	0.19**
Cohort Size (centered per 100)							0.13*	0.15*
Log likelihood	-115,219	-128,728	-112,413	-125,904	-112,375	-125,867	-110,545	-123,193

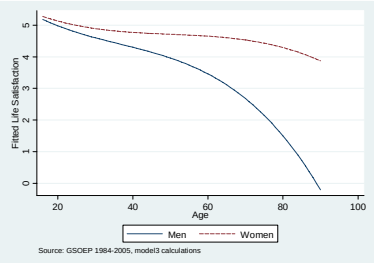
Source: GSOEP 1984-2005, West German sample

Figure 3. Age Trajectories of Happiness Adjusted for Cohort and Period Effects and for Social Investments into Job Careers and Partnerships (a) Including Failed Professional and Private Investments (b) and Personal Endowment and Outlook (c)

a) Job Careers and Partnership (Table 2, Model 2)



b) Failed Investments (Table 2, Model 3)



c) Endowment and Outlook (Table 2, Model 4)

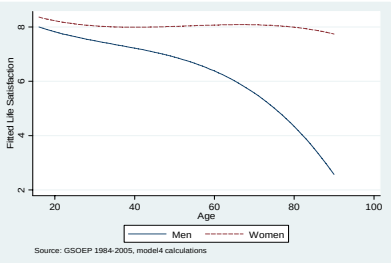


Table 4. Subjective well-being among the 30-60 year olds
(happyrevise8, happyrevise2, happyrevise5robust)

	Model 4 Life Satisfaction in 1 Year			Model 5 Life Satisfaction in 5 Years	
	Overall	Men	Women	Men	Women
Fixed part					
Age	0.18***	0.29***	0.07	-0.07	0.06
Age^2 (in 100 Years)	-0.50***	-0.76***	-0.25	0.01	-0.23
Age^3 (in 100 Years)	0.004***	0.01***	0.00	0.00	0.002
Employment Status					
Reference group: not employed					
Education, Apprenticeship, Military/Civil Service	-0.22***	-0.10	-0.26**	-0.00	0.06
Pensioner	-0.14***	-0.10+	-0.12*	0.16*	-0.03
Worker	-0.11	0.09*	-0.06*	0.15***	0.01
Chief Worker	0.07+	0.15**	0.02	0.10+	-0.29
Self-employed <=9 employees	0.03	0.08+	0.01	0.13*	-0.01
Self-employed >9 employees	-0.08	-0.04	-0.09	0.18	0.33
Professionals, Managerial	0.11***	0.17***	0.01	0.14**	0.05
Civil Service	0.21*	0.20***	0.00	0.26***	0.09
Years in Education	-0.01	-0.01	- 0.01	0.02*	-0.00
Log Household Net Income	0.13***	0.13***	0.15***	0.06+	0.00
Living circumstances					
Reference group: 1-Person Household					
Couple w/o Children	0.07+	0.07	0.04	-0.03	-0.11*
Single Parent	-0.03	-0.09	-0.02	-0.06	-0.13*
Couple w Children < 16	0.03	0.03	-0.05	-0.01	-0.14*
Couple w Children > 16 (or age unknown)	-0.01	-0.01	-0.03	-0.01	-0.15*
Multiple Generation Household	-0.08	-0.08	-0.09	0.10	0.11
Other	0.05	0.09	0.00	-0.06	-0.10

Number of Children in the Household	-0.04*	-0.05**	-0.05*	-0.08***	-0.06**
Daily Hours of Housework and Shopping	-0.00	-0.02**	0.00	0.02*	0.01
Satisfaction with Health	0.12***	0.13***	0.11***	0.04***	0.05***
Member of Church	0.18***	0.16***	0.19***	0.19***	0.15***
Reference group: non-denominational					
Unemployed	-0.32***	-0.23***	-0.19***	0.12+*	-0.00
Recently Separated from Partner	-0.24***	-0.21**	-0.20**	0.07	-0.04
Cohort Size (per 100)	-0.04	-0.11***	-0.11***	0.001***	0.002***
Self-Confidence	0.06***	0.06*	0.06*	0.02	0.04
Future Expectations (1=optimistic; 4=pessimistic)	-0.68***	-0.6/***	-0.70***	-0.48***	-0.49***
Economic Worries	0.24***	0.24***	0.25***	0.10***	0.10***
Sex (1=Female)	0.27				
Sex * Age (per Decade)	-0.04*				
Sex * Years in Education	-0.00				
Sex * Professionals, Managerial	-0.09*				
Sex * Civil Service	-0.13				
Sex * Log Household Net Income	0.02				
Sex * 1-Person-Household	-0.00				
Sex * Couple w Children < 16	-0.05				
Sex * Number of Children in the Household	0.00				
Sex * Unemployed	0.13*				
Sex * Recently Separated from Partner	0.06				
Sex * Cohort Size (per 100)	-0.02				
Constant	4.18*	2.54*	5.76***	8.65***	7.57***

Random part					
Person	0.98***	0.95***	1.00***	1.14***	1.14***
Cohort	0.38*	0.18*	0.33**	0.46*	0.42**
Reunification Period	0.18+	0.17+	0.21+	0.03	0.04
Cohort Size (centered, per 100)	0.05				
Log likelihood	-126,415	-62,817	-65,080	-43,301	-45,333

+ p < .1, * p < .05, ** p < .01, *** p <.001

Note: cohort size in model 5 is measured by 5-year cohorts (<1935, 1935-40 … 1970+) due to the restricted cohort representation among the middle-aged over a 5 year long observational period.

Source: GSOEP 1984-2005, West German sample.