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Worries across time and age in the German Socio-Economic Panel study

Julia M. Rohrer[a,b,c,1,*], Martin Brümmer[d], Jürgen Schupp[a,b,e], Gert G. Wagner[a,e,f,g]

[a] *German Institute for Economic Research (DIW Berlin), Berlin, Germany*
[b] *Institute of Sociology, Freie Universitaet Berlin (FUB), Germany*
[c] *Department of Psychology, University of Leipzig, Germany*
[d] *Independent Researcher, Leipzig, Germany*
[e] *Institute of Labor Economics (IZA), Bonn, Germany*
[f] *Max Planck Institute for Human Development, Berlin, Germany*
[g] *Berlin University of Technology (TUB), Berlin, Germany*

[*] Corresponding author at: Department of Psychology, University of Leipzig, Leipzig, Germany.
E-mail addresses: jrohrer@diw.de, julia.rohrer@posteo.de (J.M. Rohrer).
[1] Julia M. Rohrer is a pre-doctoral fellow of the International Max Planck Research School on the Life Course.

Abstract

We investigate how indicators of dissatisfaction—worries about a variety of life domains such as health, the state of the economy, and immigration—change across time and age in Germany based on Socio-Economic Panel (SOEP) data. As expected, contemporary world events influenced respondents' worries. For example, worries about peace peaked in 2003, the year of the Iraq War; worries about both immigration to Germany and hostility against foreigners have risen in the wake of the refugee crisis. We find that, independent of these historical effects, most types of worries increased with age, although this trend slows down in old age. With increasing age, respondents also became more likely to answer an open-ended question asking for "any other worries," which suggests that the age trends in worries cannot merely be attributed to a potential measurement problem due to the specific choice of worry items included in the survey.

JEL classifications: C81, C83, I31, Z13

Keywords: Life course, Worries, Satisfaction, German Socio-Economic Panel Study, SOEP

1. Introduction

A vast number of studies analyse the well-being of people by means of data on happiness and satisfaction with life in general and/or satisfaction in different domains of life. In these papers, income and other resources, as well as events (like birth of a child or becoming unemployed), are correlated with happiness and satisfaction. However, happiness and satisfaction likely do not capture *everything* that matters to an individual and there are subjective states—such as expectations and worries—that might show unique links to resources and events. In this paper, we are interested in a specific subjective state that matters for subjective well-being: We analyze people's worries about various domains (e.g., about their health, about the economy, and about the environment) across time and age based on longitudinal data from the German Socio-Economic Panel Study (SOEP).

First, we briefly introduce the predominant framework for subjective well-being, its various facets, and how worries can be located within this framework. In the second part, we describe our database, the German SOEP. In the third part, we describe how worries about different life domains changed between 2000 and 2016, while in the fourth part, we employ panel regression models to investigate how worries vary with age, considering (i) single closed-ended worry items; (ii) a composite measure reflecting the overall level of worries; and (iii) the odds of reporting additional worries in a text answer. In the fifth part, we turn to the "positive" side of wellbeing, exploring whether age-associated changes in worries can, in part, account for changes in life satisfaction over the life course. Finally, we discuss potential implications of life course trends in worries.

2. A framework of subjective well-being

Subjective well-being (SWB)—how people perceive the quality of their lives—has sparked the interest of psychologists and economists for several decades (see e.g., Diener et al., 1999, for an early retrospect of psychological research; see e.g. Weimann et al., 2015, p. 155, for a brief historical overview of economic research). Although different research traditions emphasize different conceptions of SWB, a certain degree of consensus regarding the different facets of the construct has been reached.

Broadly speaking, SWB is conceptualized as consisting of two broad components: Affective well-being, which captures the emotional experiences of respondents, and cognitive well-being, which captures how respondents consciously evaluate their life. These two broad components can be further separated into distinct subcomponents. For example, affective well-being is frequently operationalized as a two-dimensional construct that consists of a positive affect (joy, happiness, etc.) and a negative affect (sadness, worries, etc.), and there is a vivid debate regarding whether these two dimensions are independent or not (see Diener et al., 2009, for a brief summary of this debate). Cognitive subjective well-being is most frequently assessed as global judgments of one's life (e.g. global life satisfaction, meaningfulness), but it is also possible to ask for subjective assessments of specific life domains, such as marriage or leisure time.

How can people's worries be fitted into this framework? On the one hand, worry refers to an unpleasant emotional state; in this sense, one could locate worries as a part of the negative affect and, indeed, "worried" is frequently included as an attribute in scales measuring negative affect. However, worries may also reflect the conscious evaluation of specific life circumstances. For example, when asked about worries regarding their health, respondents might evaluate their own state of health—in this sense, one could think of worries as a cognitive evaluation of a specific life domain. Thus, measures of specific worries might defy the simple classification of affective versus cognitive measures. In line with this idea, clinical models of Generalized Anxiety Order, which is characterized by pathological levels of worries, acknowledge that symptoms and causes of worries are both cognitive and affective in nature (e.g., Borkovec et al., 2004).[1] As worries have this special status, it might be of particular interest to disentangle worries from other facets of subjective well-being.

3. The German Socio-Economic Panel Study (SOEP)

The German Socio-Economic Panel Study (SOEP) is a wide-ranging representative longitudinal study of private households in Germany, using a multi cohort approach, that started in 1984 (Wagner et al., 2007; Headey et al., 2010). About 15,000 households, covering about 30,000 individuals are surveyed every year by the fieldwork organization Kantar Public, Munich (formerly named TNS Infratest Sozialforschung), which has been responsible for the fieldwork of the SOEP since 1984. The data provide information on all household members, including not only German citizens in East and West Germany, but also foreigners and recent immigrants. The topics included in the survey include, among others, household composition, occupational biographies, employment, earnings, health, political attitudes, subjective indicators on well-being (Schupp 2015), such as life satisfaction in general and in different domains, as well as, of interest for the present study, worries about different life domains.

For the purpose of this study, we limited analysis to the 2000–2016 survey years.[2] We selected seven worry items that were included each of these years and were relevant to all respondents, i.e. we excluded the item regarding the security of employment as it only applied to the subsample of employed respondents.

Respondents were queried about their worries concerning (1) the general economic situation; (2) their personal health; (3) the protection of the environment; (4) peace; (5) the development of criminality in Germany; (6) immigration to Germany; and (7) hostility toward foreigners in Germany. Respondents answered on a three-point scale (1 = "very worried," 2 = "somewhat worried," 3 = "not worried at all") and we recoded the variables such that high values indicate more worries (0 = "not worried at all," 1 = "somewhat worried," 2 = "very worried").

Including only respondents who answered all of the seven closed-ended items resulted in a final sample size of 371,649 observations across 62,188 unique respondents, with an average of 5.98 records per respondent (Min = 1, Max = 17,

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[1] The fact that worries might cross the boundaries between cognitive and affective measures is probably no surprise given that the suggested facets of SWB rather constitute a useful heuristic for the assessment of a very broad concept than a theoretically motivated ontology of separable dimensions of psychological states. In fact, all facets of SWB are moderately correlated and conceptually related (Diener, Scollon, & Lucas, 2009).

[2] The sample size of the SOEP was drastically increased in 2000, which is why we chose this starting point for our analyses; 2016 was the last available data wave when we ran the analyses.

SD = 5.27). Mean age across all observations is 48.47 years (Min = 16, Max = 105, SD = 17.55) and 52.63% of all observations are female.

Following the block of closed-ended worry items, the SOEP questionnaires included an open-ended question asking for "any other worries." Depending on the survey mode, either respondents or interviewers wrote down text answers, which typically only contained a small number of key words. These text data were cleaned according to the procedure described in Rohrer et al. (2017). For the purpose of the present study, it is mainly of interest whether or not respondents provided an answer to this open-ended question.

Additionally, in each survey wave, at the very end of the questionnaire, respondents reported their life satisfaction on a single item measure ranging from 0 (completely dissatisfied) to 10 (completely satisfied).[3]

4. Worries across the years

Fig. 1 shows the percentage of respondents who reported being "very worried" about a specific domain (Panels A–G), as well as the percentage of respondents who answered the open-ended question (Panel H), across calendar years, thus offering a descriptive summary of time trends in the items. To give an impression of the responses to the open-ended question, Fig. 2 offers a visualization of the most frequently reported worries in the 2016 survey wave.

The numbers show that the worries of SOEP respondents changed over time. Worries about the general economic situation peaked from 2003 to 2006, and then again in 2009 and 2010 before returning to a comparably low and stable level since 2014 (Fig. 1, Panel A). This trend mirrors the peak of unemployment in Germany in the years after 2000 and the worldwide financial crisis in 2008 and 2009 (Fig. 3). Across the years, the mean level of worries about the general economic situation was highly correlated with the unemployment rate reported by the German Federal Employment Agency: $r = 0.80$, $p < 0.001$. Similarly, as shown in the lower panel of Fig. 3, economic worries peaked when GDP growth was depressed.

In contrast, worries about peace were especially pronounced in 2003 (Fig. 1, Panel D), the year of the Iraq War. Furthermore, we can observe the general and more recent trend that respondents reported increased worries about peace, the development of criminality in Germany, immigration to Germany, and hostility toward foreigners in Germany starting from 2014/2015. This pattern likely captures the respondent's concerns in the context of the so-called European migrant crisis, including both worries about the immigrants as well as reactions to immigration. This is further corroborated by the top 25 words in 2016, as depicted in Fig. 2: respondents worried about refugees, the state of Europe and the European Union, as well as about the new German right-wing party, AfD ("Alternative for Germany," Kroh and Fetz, 2016), which is increasingly popular since being established in April 2013.

In contrast to these domains of concern, *on average,* respondents reported the same levels of worries about their personal health across the survey waves. To some extent, this underlines the validity of the answers because there is little reason to expect that worries about one's health should have systematically fluctuated over the course of the years included in the analysis. Of course, nevertheless there was considerable intra- and inter-individual variance in worries about health. In contrast to worries about the public political situation, worries about one's health might rather be a "private matter," thus not fluctuating in sync across respondents.[4]

Interestingly, the response rate to the open-ended question about "other worries" showed comparably little change over time, peaking in 2004 at about 18%, followed by a slow decline, with a bump in 2012 and 2013, ultimately leveling off slightly above 10%. The peak for reporting "other worries" was reached when the unemployment rate peaked in Germany, probably because it *directly* affected the lives of a large number of respondents; in contrast, more recent worries about immigration and refugees co-occur with only minor increases of "other worries." This might suggest that these "other worries," for most respondents, captured worries that are "private" in the sense that they are hardly affected by e.g. recent political events or other incidents that affect the whole population at the same time. Indeed, a topic analysis of the answers to this open-ended question in the SOEP between 2000 and 2011 revealed that "future of children" and "health of family" were the most frequently occurring "other worries" (Rohrer et al., 2017).

5. Worries across the life course

To investigate how worries changed with the respondent's age, we ran multilevel models with respondents nested within the observations using the R package lme4, using a restricted maximum likelihood estimator. All models included age, age^2, and age^3 in order to allow for the estimation of smooth age trajectories.[5] Furthermore, in order to capture historical events affecting a specific calendar year, we controlled for survey year by using dummy variables for all

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[3] Please note that the life satisfaction item for the 2016 wave were not yet available when we ran our analyses.

[4] Furthermore, this might underline the quality of the survey data, since unfortunate placement of the worry items could have introduced systematic but invalid differences between the years. Every year, the worry items are included in the last part of the questionnaire, following blocks of questions about employment and income. Hypothetically, more detailed assessments of health in some, but not all of the survey years, *could* have led to temporal spikes in health-related worries (as the health items preceded the worry items); however, data suggest that the worry items were not affected by such changes in questionnaire content.

[5] In addition, we also ran models using age categories. Results were overall in line with the models including age as a continuous variable, discrepancies are discussed later.

Fig. 1. Percentage of SOEP respondents reporting being very worried about a specific domain (Panel A–G) and percentage of respondents additionally reporting "other worries" in text format (Panel H) between 2000 and 2016.

Fig. 2. 25 most frequently used words in 2016 describing "other worries," with font size reflecting word frequency. Notice that "refugee politics" corresponds to a single word in German ("Flüchtlingspolitik"), which we decided not to decompose to preserve more detailed information.

years except the reference year of 2000. The model includes individual fixed-effects to account for dependencies among observations.
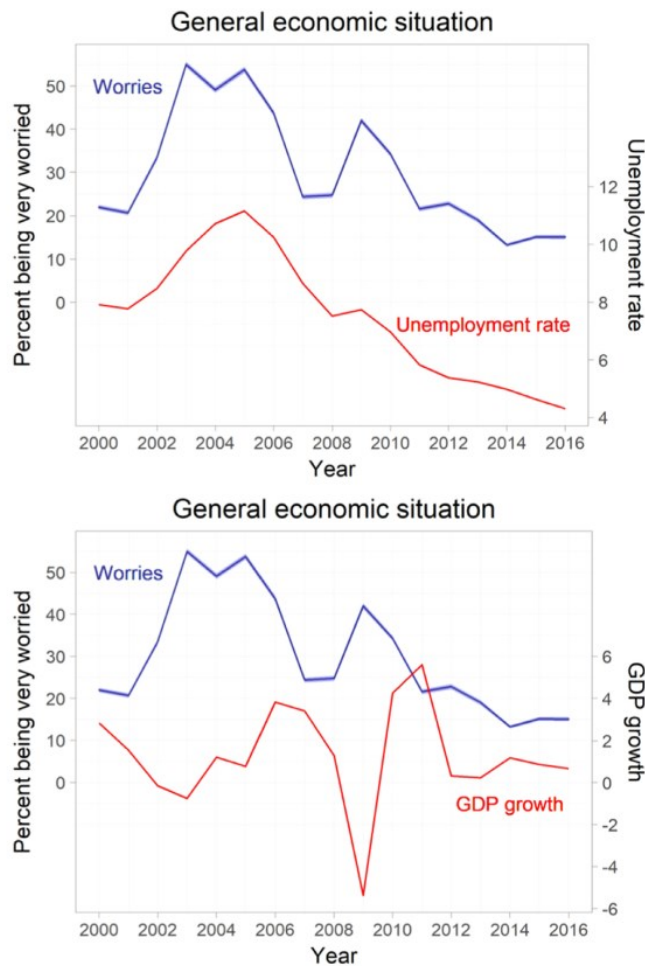
Note that we did not include any time-varying covariates such as income, household size, or number of children into our central analyses. The effects of chronological age – the passing of time – are necessarily mediated by other processes, such as role changes (e.g. job market entry, retirement, and family formation) or age-associated differences in health and cognition. Controlling for these mediating variables would obscure the actual age effect (overadjustment bias, cf. e.g. Schisterman et al., 2009) and, in the most extreme case, cause age effects to disappear: an age effect net of everything that changes with age would be zero, as the sheer passing of time in itself cannot have a meaningful effect. To offer an illustration and a *reductio ad absurdum* of the so-called "ceteris-paribus approach" (Blanchflower & Oswald, 2017): The effect of age on mortality (death by natural causes) would disappear if we "controlled for" all conceivable health parameters down to the cellular level and we might predict an infinite lifespan based on such a model. Thus, we consider it more appropriate to report our central analyses without the inclusion of such time-varying covariates, i.e. the unconditional effects (cf. Baetschmann, 2014).

However, models controlling for time-varying covariates to investigate the marginal effect of age without socio-economic influences are standard in epidemiology and economics. Blanchflower and Oswald (2017) argue that, in principle, neither approach is better than the other: they answer different research questions. Thus, to provide additional information to researchers interested in the marginal effect, to demonstrate the robustness of our central conclusion, and to allow for comparison with previous studies, we report a supplementary analysis taking into account time varying covariates.

First, we ran generalized linear mixed-effects models with a logit-link function for the single worry items, predicting whether a respondent reported being "very worried" (as opposed to "not worried" or "somewhat worried"). In almost all cases, the coefficients of the dummy-variables for survey year indicate significant differences between the calendar years, which is not surprising given the large sample size (see Appendix for the numerical results of all multilevel models). Furthermore, they closely mirror the purely descriptive results in Fig. 1, which is why we do not discuss the effects of the calendar year here again, instead focusing on the model-implied age trends.

Fig. 4 shows the predicted odds ratio of respondents being "very worried" about a specific domain (i.e. odds or reporting being "very worried" divided by odds of being less than very worried; Panels A–G) and the odds of reporting "other worries" (Panel H) in the reference year, 2000. For example, the model implies that the odds of reporting being very worried about criminality (Panel E) for respondents over the age of 70 exceeded two, which means that they were twice as likely to report being very worried than to not report being very worried. Notice that all age trends (i.e., the compound tests of the three age coefficients) are statistically significant at $p < .001$, which is not a surprise given the large sample size.

Fig. 3. Percentage of SOEP respondents reporting being very worried about the general economic situation plotted against the unemployment rate in percent of the total labor force, and GDP per capita growth in annual percent (World Development Indicators, The World Bank).

Second, we generated a worry score by averaging all seven worry items for each observation. Across all observations, this measure had satisfying reliability with Cronbach's $\alpha = 0.72$. The grand mean of this score is 1.10, indicating that the overall mean answer across all respondents, all waves, and all items is close to "somewhat worried" ($SD = 0.42$). This worry score was used as the dependent variable in a linear multilevel model. Fig. 5 shows the model implied worry scores by age in the reference year 2000. Fig. 5 additionally reports the implied trajectory from a model in which a number of time-varying covariates[6] were included. In this model, the age increase appears slightly steeper; but, as previously discussed, we consider the trajectory without such covariates more interpretable.

Mean worry scores increased across the age span until around age 65, with an average change of 0.09 SD per ten years of age. The overall trend is sustained by four of the seven items: worries about personal health, peace, the development of criminality, and immigration to Germany all significantly increased with age. Additionally, older respondents are increasingly likely to use the open-ended question to express their worries. However, this general trend is somewhat qualified by the item concerning the general economic situation, which follows a hump shape, the item worries about the protection of the environment that follows a more complex age pattern with only slight age changes, and the item concerning worries about hostility against foreigners, which shows a clear negative age trend.

Furthermore, data are compatible with decreases of worries in old age. Additional analyses using age groups descriptively indicate that the mean worry score slightly declined among the oldest (86–105) and this trend could be attributed to

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[6] Number of individuals in the household (categorical predictor: 1, 2,…, 7 and more), number of children in the household (categorical predictor: 0, 1, 2, 3, 4 and more), disability status (yes/no), income, self-rated health (rated on a 1–5 scale), and employment status (categorical: full time/part time/not working).
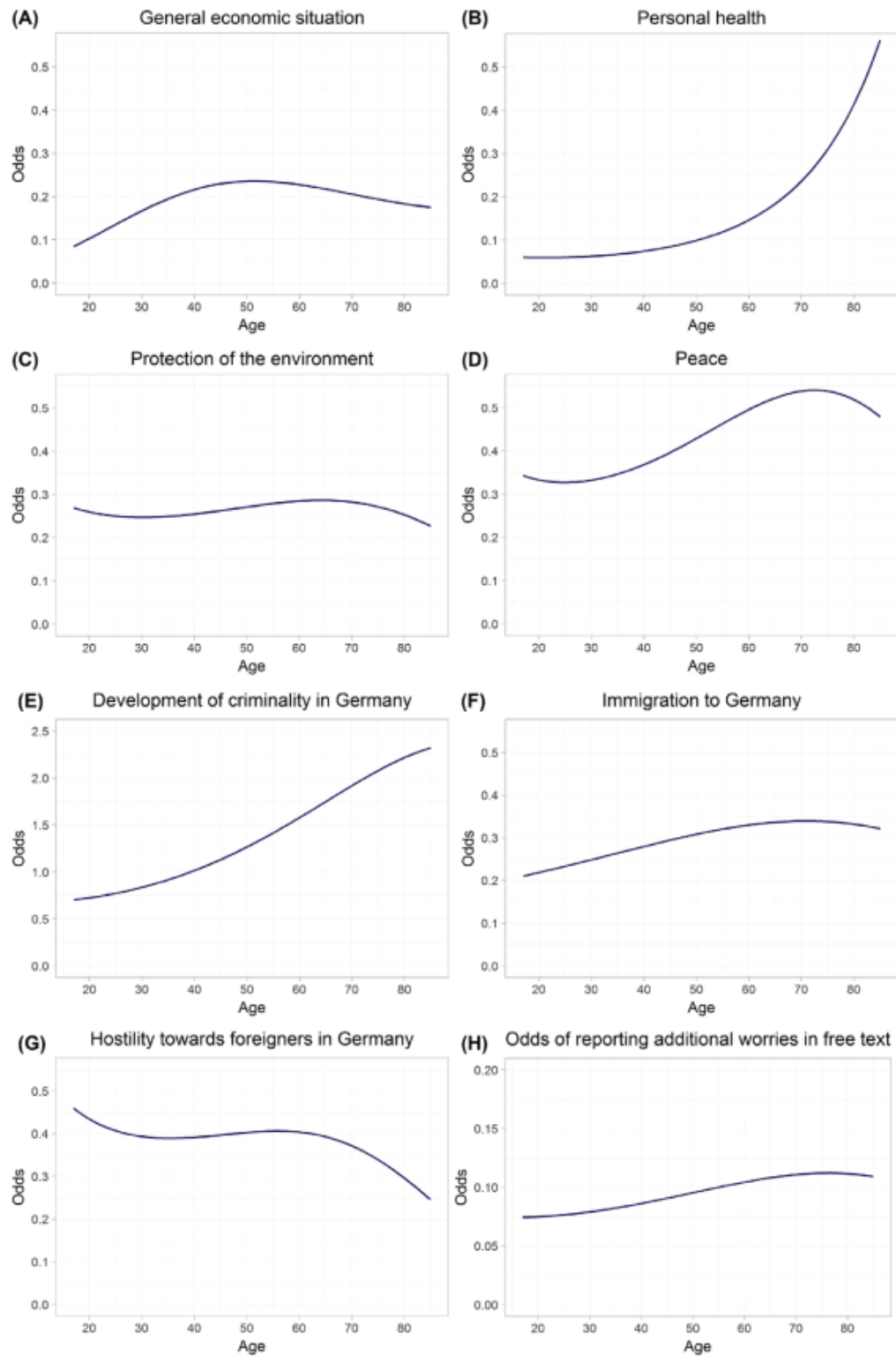
Fig. 4. Age trajectories of odds of being very worried about a specific domain, i.e. odds or reporting being "very worried" divided by odds of being less than very worried (Panel A–G) or reporting "other worries" (Panel H) in the reference year 2000, as implied by multilevel models. Note that the range of the y-scales is different for panel E and H to magnify statistically significant age trends.
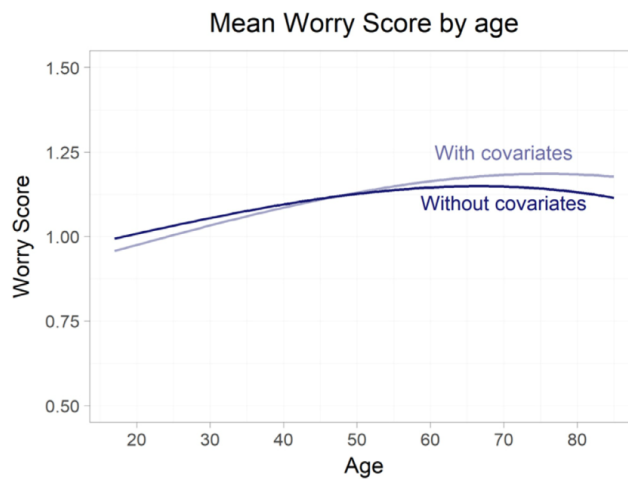
Fig. 5. Model implied mean worry scores by age in the reference year 2000, scale ranges from 0 ("not worried at all" in all domains) to 2 ("very worried" in all domains). "With covariates" refers to the model implied trajectories when controlling for household size, children in household, disability status, children in the household, income, employment status and self-reported health status.

declines in worries in five domains late in life (general economic situation, hostility towards foreigners, peace, development of criminality, protection of the environment, general economic situation, immigration to Germany). However, the number of data points in this oldest age group ($N = 4056$) is considerably smaller than e.g. in the second oldest age group (76–85, $N = 21{,}711$). Thus, we consider it premature to assert a late life decline in worries.

Overall, in some sense the age profile of the mean worry score (Fig. 5) is a counterpart to the well-known age profile of well-being: the strong increase of worries up to age 50 is mirrored by a decrease of satisfaction with life. Then, the almost flat line beyond age 60 is in line with the development of satisfaction with life in older age as we show in the following section. Motivated by this similarity, we next investigate how the age trends in worries relate to age trends in life satisfaction.

6. The relationship between age trends in worries and life satisfaction

The analyses of well-being by means of "happiness research" is a booming research field, especially in economics (Frey 2008), but also in psychology, sociology, political science, and public policy (Diener et al., 2009). As its name implies, "happiness research" often focuses on the *positive* side of humans' subjective experience, such as affective well-being or life satisfaction as a cognitive measure. Age trends on such constructs are investigated in depth, but the conclusions are not as clear as one might wish.

For example, Blanchflower and Oswald (2008) find, for the US and European countries, consistent evidence of a robust U-shape of happiness in age across different birth cohorts; although very old people are not well represented in most surveys. In line with such a pattern, Cheng et al. (2017) find evidence for a midlife nadir in life satisfaction in their investigation of trends *within* respondents using longitudinal data from four different longitudinal studies. Boarini et al. (2012) find a similar U-shape in the Gallup World Poll and, furthermore, report that this trend also holds for affect balance, an affective measure of well-being that captures to what extent positive emotions exceed negative emotions. Stone et al. (2010) suggest that global well-being and positive hedonic well-being generally has U-shaped age profiles showing increased well-being after the age of 50; in contrast, negative hedonic wellbeing (including worries) is elevated through middle age and then declines. In line with the peak in *negative* hedonic states, Oswald and Tohamy (2017) provide evidence for increased suicide rates of women in midlife. Schwandt (2016) suggest that the overall U-shaped pattern arises because of unmet expectations in middle age: young adults might overestimate their future life satisfaction, leading to regret in midlife.

However, the narrative of the U-shaped trajectory is not uncontested. Kassenboehmer and Haisken-DeNew (2012) suggest that accounting for fixed effects and respondent experience in the panel leads to a flat trajectory. Newer studies attempt to separate age, period, and cohort effects on the level of life satisfaction and to consider the different durations of longitudinal study participation (Baetschmann, 2014). Baetschmann suggested that the total U-shape effect is small in magnitude (0.4 scale points on a 0–10 scale with an SD of 1.81), thus being compatible with findings of flat trajectories. Based on SOEP data, he finds that, for Germany, life satisfaction is on average mildly decreasing up to age 55, followed by a hump shape with a maximum at age 70, followed by a steep decline toward the end of respondents' lives (Gerstorf et al., 2008).

So far, this study investigates worries, which are arguably located at the negative end of the well-being continuum. As we find positive age trends in worries, it might be interesting to consider whether the age trends in worries can, in
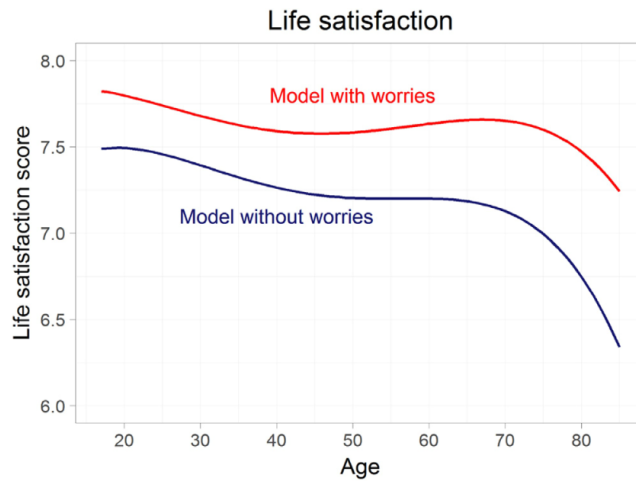
Fig. 6. Model implies life satisfaction scores in the reference year 2000 with and without statistical control for the seven worry items, scale ranges from 0 ("completely dissatisfied") to 10 (completely satisfied). Values in model with worries at 0 ("no worries") on all seven items.

part, explain age trends in life satisfaction, a positive measure of well-being. Thus, we run additional exploratory analyses, this time modeling life satisfaction as a function of age and calendar year, following the statistical approach that does not "control" for mediators as outlined before. Considering the more complex age trajectory of well-being suggested by Baetschmann (2014), the model additionally contains age to the power of four. We then re-run the model including all seven worry items (dummy-coded) into the analyses. All worry items had significant main effects on life satisfaction with negative effects observed for worries about the general economic situation, health, and immigration to Germany, but positive effects for worries about the environment, peace, criminality, and foreigners. These partly unexpected main effects are not the focus of the present study.[7]

Fig. 6 shows the model-implied age trajectories for both versions of the model. The blue line shows that in our standard model (without including worries), life satisfaction steadily decreases until age 50. Instead of a hump peaking at age 70 (cf. Baetschmann, 2014), in our model, an almost flat line follows prior to the well-known terminal decline in very old age. In the model including the worry items, the age trend appears to be slightly different and more in line with the frequently reported U-shape: The decline until age 50 is followed by a hump shape that peaks at 70 prior to the terminal decline, which now appears less pronounced. Note that the red line, i.e. the age trajectory controlling for the seven worry items, indicates a higher level of life satisfaction only because it is estimated for "no worries" on all seven worry items.

Importantly, even after statistical control for worries, age trends on life satisfaction overall persisted ($p < .001$). Comparing the variance attributable to the age variables, partial R-squared indicates that the worry items do not pick up substantial parts of the age effects: Age accounted for 0.24% of variance in life satisfaction without considering the worry items, and for 0.21% when the worry items were included in the model. This suggests that worries and life satisfaction—though both being indicative of subjective well-being—are not interchangeable and cannot be reduced to a simple one-dimensional construct: While the age trends in both measures complement each other, they provide non-redundant information. Multiple measures with different focuses must be taken into account in order to gain a more complete picture of SWB (cf. Diener et al., 2009b).

7. General discussion

To summarize our results, we investigate how worries in Germany change across time and age. We find that world events influence worries. For example, worries about peace peak in 2003, the year of the Iraq War, and corresponding patterns are observable for other items. Importantly, worries about both immigration and hostility against foreigners have increased substantially since 2014, with refugees and the rise of the right-wing political party, AfD ("Alternative for Germany"), the objects of "other worries" as reported in open ended text format in 2016.

Furthermore, results indicate that worries about different domains increase with age, which held true for worries about the general economic situation, one's health, peace, criminality, and immigration; but not for worries regarding hostility toward foreigners in Germany. It is possible that this age-related increase in worries is a result of a kind of biased selection of items that are more relevant to older adults than those who are younger. However, if this is true, one would probably expect that younger adults would increasingly use the open-ended question to voice additional worries that plague them,

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[7] Note that in models considering one worry item at a time, each worry domain has a *negative* effect on life satisfaction, thus the reversal of sign for some coefficients in the combined model is attributable to the overlap between the worry items.

	Economic situation		Health		Environment		Peace		Criminality		Immigration		Hostility		Text answer		Worry score		Life satisfaction	
	b	p	b	p	B	P	b	p	b	p	B	p	b	p	b	p	b	p	b	p
Age – standardized																				
Age	0.063	<0.001	0.569	<0.001	0.114	<0.001	0.278	<0.001	0.394	<0.001	0.156	<0.001	0.050	.001	0.176	<0.001	0.072	<0.001	−0.018	.058
Age^2	−0.197	<0.001	0.160	<0.001	−0.008	0.269	0.003	.679	0.007	.358	−0.044	<0.001	−0.025	<0.001	−0.009	.321	−0.017	<0.001	0.017	<0.001
Age^3	0.048	<0.001	−0.010	.168	−0.041	<0.001	−0.050	<0.001	−0.023	<0.001	−0.009	.150	−0.054	<0.001	−0.020	<0.001	−0.003	<0.001	−0.069	<0.001
Overall	X(3)=1500.70		X(3)=4613.10		X(3)=97.54		X(3)=719.85		X(3)=2225.20		X(3)=389.35		X(3)=230.26		X(3)=340.19		X(3)=2898.00		X(3)=1407.02	
Year – reference 2000																				
2001	−0.126	<0.001	−0.047	.139	−0.110	<0.001	−0.220	<0.001	−0.202	<0.001	−0.395	<0.001	0.274	<0.001	0.012	.707	−0.022	<0.001	0.034	.005
2002	0.749	<0.001	−0.116	<0.001	−0.306	<0.001	0.636	<0.001	−0.296	<0.001	−0.159	<0.001	−0.217	<0.001	−0.148	<0.001	0.028	<0.001	−0.117	<0.001
2003	1.944	<0.001	−0.173	<0.001	−0.244	<0.001	1.616	<0.001	−0.598	<0.001	−0.326	<0.001	−0.605	<0.001	0.168	<0.001	0.074	<0.001	−0.181	<0.001
2004	1.631	<0.001	0.143	<0.001	−0.293	<0.001	0.434	<0.001	−0.564	<0.001	0.132	<0.001	−0.551	<0.001	0.461	<0.001	0.041	<0.001	−0.353	<0.001
2005	1.879	<0.001	0.088	.007	0.069	.009	0.373	<0.001	−0.300	<0.001	0.547	<0.001	−0.090	<0.001	0.319	<0.001	0.092	<0.001	−0.219	<0.001
2006	1.328	<0.001	0.135	<0.001	0.001	.974	0.576	<0.001	−0.543	<0.001	0.267	<0.001	−0.231	<0.001	0.266	<0.001	0.062	<0.001	−0.280	<0.001
2007	0.143	<0.001	0.113	.001	0.666	<0.001	0.196	<0.001	−0.512	<0.001	0.000	.987	−0.280	<0.001	0.098	.003	0.012	<0.001	−0.241	<0.001
2008	0.171	<0.001	0.080	.017	0.080	.003	−0.054	.030	−0.845	<0.001	−0.301	<0.001	−0.546	<0.001	−0.117	.001	−0.042	<0.001	−0.212	<0.001
2009	1.281	<0.001	0.150	<0.001	0.030	.266	−0.249	<0.001	−1.199	<0.001	−0.639	<0.001	−0.797	<0.001	−0.239	<0.001	−0.042	<0.001	−0.264	<0.001
2010	0.869	<0.001	0.396	<0.001	0.208	<0.001	−0.209	<0.001	−0.889	<0.001	−0.533	<0.001	−0.668	<0.001	−0.416	<0.001	−0.037	<0.001	−0.052	<0.001
2011	−0.044	.107	0.400	<0.001	0.265	<0.001	−0.218	<0.001	−1.276	<0.001	−0.432	<0.001	−0.888	<0.001	−0.576	<0.001	−0.079	<0.001	−0.222	<0.001
2012	0.057	.039	0.363	<0.001	0.045	.106	−0.397	<0.001	−1.391	<0.001	−0.859	<0.001	−0.770	<0.001	−0.322	<0.001	−0.105	<0.001	−0.164	<0.001
2013	−0.248	<0.001	0.172	<0.001	−0.090	.002	−0.228	<0.001	−1.422	<0.001	−0.597	<0.001	−0.865	<0.001	−0.341	<0.001	−0.116	<0.001	−0.106	<0.001
2014	−0.710	<0.001	0.380	<0.001	0.018	.482	0.325	<0.001	−1.244	<0.001	−0.204	<0.001	−0.646	<0.001	−0.474	<0.001	−0.082	<0.001	−0.085	<0.001
2015	−0.527	<0.001	0.269	<0.001	−0.076	.005	0.783	<0.001	−0.953	<0.001	0.247	<0.001	0.128	<0.001	−0.599	<0.001	−0.005	.113	0.024	.075
2016	−0.555	<0.001	0.189	<0.001	0.102	<0.001	1.278	<0.001	−0.227	<0.001	1.289	<0.001	1.019	<0.001	−0.600	<0.001	0.109	<0.001	(Data not yet available)	

whereas we observed in our data that the chances of responding to the open-ended question also increases with age. Lastly, we find that worries are not able to account for the age trends in life satisfaction, underlining that these two measures are not redundant.

Rumination—in the field of psychology defined as repetitive negative thoughts about the *past or present*—is linked to a wide range of negative outcomes, including impaired problem solving and inhibition of instrumental behavior (Nolen-Hoeksema et al., 2008). Likewise, worries—repetitive negative thoughts about potential threats in the *future*—are linked to impaired decision making (e.g., Metzger et al., 1990).

However, from this, it does not necessarily follow that our results suggest that age accompanies worse decision making. Studies investigating the consequences of worries frequently employ measures that ask for worries in an unspecified manner (e.g., "I am always worrying about something") and might thus mostly tap the negative affective component of worries. This dimension of negative affect is tightly link to the personality dimension of neuroticism—in fact, the tendency to worry is part of many personality scales measuring trait neuroticism—which actually tends to *decline* with increasing age (Roberts et al., 2006).

In contrast, our study addresses worries about specific life domains that are potentially shaped by conscious cognition, such as the evaluation of potential threats. Such processes are not necessary maladaptive: "Worry is reasonable" (MacLeod et al., 1991) as it is a strategy to prevent negative events from happening and prepare for the potential con-sequences (Freeston et al., 1994). In line with this notion, a study shows that individuals suffering from pathologic worries are characterized by enhanced processing of potential future losses (Mueller et al., 2010).

Thus, the age trend in worries we find might reflect an increased allocation of attention to potential threats and losses with age. Importantly, such a trend is not necessarily maladaptive or irrational, but could likely affect the way in which older individuals make economic decisions. Their increased sensitivity for potential threats and losses could lead to increasing risk aversion and, indeed, older individuals across the globe report that they are less likely to take risks (Mata et al., 2016).

Appendix. Numerical results of multilevel models

Results of general linear mixed models predicting worries and life satisfaction from age (including compound test of all three age coefficients, all $p < .001$) and calendar year.

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