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Journal of Happiness Studies
https://doi.org/10.1007/s10902-023-00676-w

RESEARCH PAPER

Life Satisfaction During the COVID-19 Pandemic: The Role of Human, Economic, Social, and Psychological Capital

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Accepted: 11 June 2023

Abstract
A cornerstone of well-being research is that the resource-rich are happier with their lives than the resource-poor and better positioned to cope with stressful life events. This paper addresses the role of various resources—human, economic, social, and psychological capital—in life satisfaction during the coronavirus pandemic, using panel data from Germany and the United Kingdom for 2020 and 2021. Cross-sectionally, we find life satisfaction to be clearly related to all these forms of capital, with psychological capital being the strongest predictor of life satisfaction. Longitudinally, the capital endowments in 2020 did not predict changes in life satisfaction within individuals from 2020 to 2021, except for psychological capital. Our results suggest two things: first, the unfolding pandemic did not heighten well-being inequalities; and second, weathering the pandemic required psychological resources in the first place.

Keywords COVID-19 · Life satisfaction · Well-being inequality · Economic capital · Social capital · Psychological capital

1 Introduction

Leading a happy and fulfilling life has become an important goal for individuals in postmodern societies (Burnett, 2012), and issues of quality of life have risen up the political agenda (Bache, 2013). It is therefore no surprise that subjective well-being (SWB) has been an important issue for social scientists since the beginning of the coronavirus pandemic that kept the world in suspense for fully three years (by the end of 2022, it seemed to have entered an endemic stage). With millions of deaths worldwide

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Published online: 18 July 2023

and many more millions infected, the novel coronavirus (COVID-19) posed a dramatic threat to individual and public health, with repercussion for social and economic life: The tough measures national governments undertook to contain the virus, such as social distancing rules and lockdowns, caused social and public life to freeze temporarily and economies to shrink (Destatis, 2022; Hale et al., 2021).

Under the new pandemic conditions, SWB research focused primarily on mental distress, with the majority of studies—unsurprisingly—showing an increase in stress symptoms and psychological problems across the globe (Banks et al., 2021; cf. also the meta reviews by Aknin et al., 2022; Robinson et al., 2022). Negative emotions increased significantly in many countries, according to the *World Happiness Report 2021* (Helliwell et al., 2021)—including, apparently, in the two countries that are the focus of the study at hand: Germany (Zacher & Rudolph, 2021) and the United Kingdom (Bonomi Bezzo et al., 2021). In contrast, the pandemic's impact on evaluative well-being—life satisfaction—was much less clear-cut. Comparing cross-sectional survey data before and after the outbreak of the pandemic, the *World Happiness Report 2021* listed 20 countries (including the United Kingdom) with worsening, 49 with steady, but also 26 countries (including Germany) with improving average life satisfaction (Helliwell et al., 2021). The *World Happiness Report 2022* (Helliwell et al., 2022) confirmed these results and did not find a clear downward trend of overall life satisfaction.

Yet, stability at the aggregate level neither precludes volatility at the individual level, nor widening or shrinking of well-being inequalities. In many countries there have been intense debates about various subpopulations being hit especially hard by the lockdown of shops, offices, and schools, such as women (Bertogg et al., 2021; Zoch et al., 2021), parents (Huebener et al., 2021), singles (Tutzer et al., 2021), younger people (Entringer et al., 2020), and workers (Schmidtke et al., 2021). Despite governmental aid packages, poverty rates in Europe increased in the first year of the pandemic (Menta, 2021), and so did the economic strain of low-income households (Gambacorta et al., 2021). In short, the main concern was that the pandemic increased existing inequalities, rather than being the "democratic leveler", as Beck (1992) described the new dangers of late modern risk society.

Against this background, this paper is specifically interested in life satisfaction inequality under the pandemic conditions, and the role of three broad types of capital in the formation of individual-level differences in satisfaction: human and economic capital, social capital, and psychological capital. Because these resources are widely seen as protective forces for well-being, the progressing pandemic could have widened gaps in life satisfaction. To verify this assumption, we utilize two rounds of binational panel data for Germany and the United Kingdom from the "Values in Crisis" project (henceforth: "VIC-project") collected in spring 2020 and 2021. These data allow us to track the development of life satisfaction within individuals and its association with capital endowments as the pandemic progressed—and worsened—in Europe. From today's perspective, Germany and the United Kingdom certainly qualify as quite similar cases in how the pandemic has been managed overall. Yet, in early 2020, the United Kingdom pursued a less stringent approach to combat the pandemic (Hale et al., 2021; Steinhardt, 2021), and throughout the first year of the pandemic both infections and casualties were markedly higher in the United Kingdom than in Germany (Ritchie et al., 2020). The findings of our study will be important for judging the consequences for well-being of the pandemic from a social inequality perspective.

2 Conceptual Considerations and Development of Hypotheses

2.1 Linking life Satisfaction and Capital Endowments

Life satisfaction can be defined as the "*degree to which an individual judges the overall quality of his/her own life-as-a-whole favorably*. In other words: how much one likes the life one leads" (Veenhoven, 1984, p. 22; italics in the original). As the arguably most cognitive component of SWB, it is conceptually different from more affective components such as positive and negative emotions (Diener et al., 2003; Nettle, 2005), although people take their emotional well-being into account when striking an overall balance of life (Veenhoven, 2012). Life satisfaction *inequality* denotes the uneven distribution of life satisfaction within populations. In pre-pandemic Germany and the United Kingdom, life satisfaction inequality was slightly below the European average (Delhey & Kohler, 2011; Kalmijn & Veenhoven, 2005). We also explore the degree to which individuals' endowment with various forms of capital induces differences in—and in this sense structures—life satisfaction. This extent of *structuration* and the scale of inequality are not simply two sides of the same coin. It is possible that life satisfaction is unequally yet largely *randomly* distributed within a population; in such a situation, capital endowments will contribute little to shedding light on why some individuals are more satisfied with their lives than others.

Life satisfaction is the tail end of a complex process in which various layers are involved, from genetic dispositions to large-scale societal conditions, as summarized in the sequence model of life evaluation (Veenhoven, 2012). The starting point of this model is a person's life chances (step 1), which can be broken down analytically into individual life abilities (e.g., physical health and psychological health), personal resources (economic, human, and social capital), and external conditions of the larger social environment. These mutually influencing life chances are systematically linked to the course of positive or negative events a person encounters in daily life (step 2), which in turn confronts this person with a flow of pleasant or unpleasant experiences (step 3). In the final step (4), individuals convert the resulting stream of emotions and cognitions into an overall evaluation of life.

This study focuses on selective components of people's life chances: on *human*, *economic*, and *social capital* (personal resources, in Veenhoven's terminology); and on *psychological capital* (part of individual abilities). This selection is arises from the objective of including important forms of capital; additionally, we had to keep data availability in mind. For example, our data do not allow us to properly measure physical health. Lastly, the larger environment (Veenhoven's third category of life chances) matters in our research in so far as the COVID-19 pandemic signified a new and potentially life-threatening social reality.

We link Veenhoven's sequence model to the concepts of *human*, *economic*, and *social* capital that trace back to French sociologist Pierre Bourdieu (1986). Possessing capital opens up scope for action "so that everything is not equally possible or impossible" (Bourdieu, 1986, p. 241). While human capital refers, for example, to institutionalized cultural capital in the form of educational qualifications, economic capital denotes all goods directly convertible into money. A number of (pre-pandemic) studies have demonstrated that those with a higher income are more satisfied with life (Bartolini et al., 2013; Caporale et al., 2009; Delhey, 2004; Pancheva & Vásquez, 2022). The satisfaction dividend of education, on the other hand, appears to be low, insofar as it is evident at all (Bartolini et al., 2013; Pancheva & Vásquez, 2022).

Social capital refers to the resources embedded in social networks of knowing and trusting each other (Bourdieu, 1986). The well-being effects of a solid partnership and other primary networks, especially family networks, are a well-established finding (Bartolini et al., 2013; Haller & Hadler, 2006; Pancheva & Vásquez, 2022). Social participation in associations and community life, including religious participation, is also positively linked to life satisfaction (Jagodzinski, 2010; Pancheva & Vásquez, 2022; Snoep, 2008), as is social trust in fellow citizens as an attitudinal component of social capital (Calvo et al., 2012; Elgar et al., 2011).

Bourdieu's idea of capital endowments can be augmented by another form of capital: Various psychological resources that form people's *psychological capital* (Luthans & Youssef-Morgan, 2017) also enable individuals to consciously direct their lives—and consequently to lead a happy life. For example, emotional stability is among the personality traits that predict life satisfaction best (DeNeve & Cooper, 1998; Dyrenforth et al., 2010; Morris et al., 2015; Specht et al., 2013), and empathy is positively associated with life satisfaction across the life span (Grühn et al., 2008). Finally, mental problems as an indicator of low psychological capital are tightly linked to low life satisfaction (Flèche & Layard, 2017; Morris et al., 2015; Vázquez et al., 2015).

Well-being research has established that resource-rich people can cope better with negative life events (see Hobfoll, 2002), and various forms of capital are considered in stress coping models, e.g., in the stress process model (Turner, 2010; Wheaton, 2010).

2.2 Life Satisfaction Inequality During The Pandemic

Under the pandemic conditions, existing well-being inequalities were very likely sustained, or even reinforced (for mental health, cf. Banks et al., 2021), because the novel coronavirus threatened the health of everyone, and the political containment measures (the closing of national borders, social distancing, lockdowns) interrupted life for all members of society. Indeed, one study using German data reported a drop in average life satisfaction in the general population (Raffelhüschen & Grimm, 2020). Yet, despite this broad impact, social scientists in particular were quick to point out that some subpopulations were hit harder than others. Almost everywhere, COVID-19 infections and death rates displayed a social gradient, with higher rates among the economically disadvantaged (Marmot & Allen, 2020). The repercussions of containment policies had socially selective well-being consequences, too. For example, workers (Schmidtke et al., 2021), especially low-skilled—and typically low-paid—service workers, were more likely to be let go or put on short hours than high-skilled office or manual workers (Witteveen, 2020). Women took on a larger share of the responsibility for homeschooling and homework (Zartler et al., 2022), especially those with young children (Huebener et al., 2021; Zoch et al., 2021). Further, contact limitations arguably hit younger age groups harder than the elderly (Kharel et al., 2022), and singles harder than those living together with a partner or other family members. The longer the pandemic has lasted, one can argue, the more likely it is that the social selectivity of the pandemic will become visible—and leave its mark on life satisfaction. Hence our *first hypothesis*, concerning life satisfaction inequality, reads as follows:

H1 The dispersion of life satisfaction was larger during the second year of the pandemic (that is, spring 2021) than during the early stage of the pandemic (that is, spring 2020).

Thus far, evidence on the dispersion of life satisfaction during the pandemic is scarce. According to the World Happiness Report 2021, the dispersion of the Cantril Ladder was stable during the pandemic in both Western Europe and Central and Eastern Europe (Helliwell et al., 2021); according to a Canadian study (Helliwell et al., 2020), the distribution of life satisfaction became slightly more unequal under the pandemic conditions.

2.3 Life Satisfaction Structuration During The Pandemic

The preceding considerations can easily be extended to the structuration issue. Given the rising economic strain in European countries, especially for those with low income (Gambacorta et al., 2021), life satisfaction could depend more strongly on economic capital the longer the pandemic lasts. Social capital may also have become more important, as every third adult in Germany reported the loss of contact with acquaintances, and every fourth with friends (Bertogg et al., 2021). A similar case can be made for psychological capital, as the worsening pandemic meant renewed lockdowns and the mental processing of higher case numbers of sick and dead, especially in winter 2020/spring 2021. In light of these considerations, our second hypothesis reads as follows:

H2 In 2021, life satisfaction was more strongly impacted by human and economic, social, and psychological capital than in 2020.

Previous research has produced mixed findings: The World Happiness Report for 2020, based on the pooled global sample analyzed for that year, stated: "COVID-19 has reduced the effect of income on life satisfaction, increased the benefits of living as a couple (…), increased the happiness effects of generosity, and sharply increased the life satisfaction of those 60 years and older" (Helliwell et al., 2021, p. 37). Yet the overall explanatory power did not increase, which suggests that life satisfaction is not more deeply structured in the pandemic conditions than before. The report, however, does not present analyses for individual countries. For Germany, several studies reported increasing life satisfaction differences by education (Huebener et al., 2021), gender (Möhring et al., 2021), and political trust (Bittmann, 2022), while others reported decreasing differences by education and income (Entringer et al., 2020). In the United Kingdom, studies found that residents in disadvantaged neighborhoods—compared to those in rich ones—experienced a larger drop in emotional well-being, but not in evaluative well-being, to which life satisfaction belongs (Bonomi Bezzo et al., 2021), self-employees experienced a drop in life satisfaction due to an income loss (Yue & Cowling, 2021), and mothers—but not fathers—experienced an accumulation of parenting stressors over the course of the pandemic, resulting in a deterioration of life satisfaction (Hudde et al., 2023).

2.4 Individual Changes in Life Satisfaction During the Pandemic

In Germany and the United Kingdom, COVID-19 infection rates skyrocketed in the second and third waves of the pandemic, which rolled across Europe in the fall of 2020 and in winter 2020/21 (Ritchie et al., 2020). It is likely that this worsening of the pandemic refreshed threat perceptions among populations confronted with repeated lockdowns, and complicated adaptation. Individual-level changes in life satisfaction in all possible directions are a likely outcome. For example, one British study found that increases in activities such as volunteering, gardening, and exercising predicted an increase in individual life satisfaction,

while spending more time following COVID-19 news, working, or parenting predicted a decrease (Bu et al., 2021). If one consults models such as the stress process model (Turner, 2010; Wheaton, 2010), systematic differences in trajectories of life satisfaction can be expected, depending on individuals' human and economic, social, and psychological capital, resulting in the following hypothesis:

H3 Over the course of the pandemic, individuals' endowment with human, economic, social, and psychological capital shaped the development of their life satisfaction from spring 2020 to spring 2021.

Several panel studies from Germany and the United Kingdom are in line with our considerations: Limited economic and human resources such as financial strain and job loss (Carlsen et al., 2022; Preetz et al., 2021), as well as strains resulting from social capital such as being a caregiver or parent (Ehrlich et al., 2022; Hudde et al., 2023; Vicari et al., 2022), have been identified as risk factors for longitudinal changes in life satisfaction and psychological well-being. Having peer contacts, being socially integrated, having an intimate partner, and self-efficacy, however, acted as protective factors during the pandemic and were associated with increasing life satisfaction in the later stages of the pandemic, especially for young people (Henseke et al., 2022; Preetz et al., 2021).

3 Methods

3.1 Data and *Sample Characteristics*

The hypotheses are put to an empirical test based on balanced panel data from the project "Values in Crisis – A Crisis of Values?" (Aschauer et al., 2021). This binational survey project examined values, attitudes, and subjective well-being during the COVID-19 pandemic, in spring 2020 (round 1) and in spring 2021 (for round 2, see Table 1). The fieldwork was carried out by Bilendi Market Research GmbH, which recruited respondents from their online panel through a quota sampling strategy that included hard quotas on

Table 1 Average and dispersion of life satisfaction in Germany and the UK

	2020	2021
DE ($n = 1268$)		
Average life satisfaction	6.89	6.74
Standard deviation	2.10	2.16
Percent maximum standard deviation	0.49	0.50
Maximum possible standard deviation	4.28	4.33
Jenkins's inequality index (upward-looking status)	0.58	0.58
UK ($n = 1088$)		
Average life satisfaction	6.85	6.59
Standard deviation	1.97	2.04
Percent maximum standard deviation	0.46	0.47
Maximum possible standard deviation	4.29	4.37
Jenkins's inequality index (upward-looking status)	0.57	0.58

Note: Average weighted with design weight

gender, age, education, and regions as well as corresponding cross-quotas on the basis of the official statistics for the population aged 18–74 in Germany and the United Kingdom—the core countries of the VIC-project. The raw samples were, in addition, calibrated on the basis of gender, age, educational level, and region, thereby yielding close to representative samples for the respective country populations (see Appendix, Table A1, for comparisons with population statistics). Due to the pandemic conditions, all respondents were interviewed using an online questionnaire. Overall, we draw upon 2435 respondents (1285 from Germany, 1150 from the United Kingdom) that participated in both survey rounds. Missing values on any of the relevant items were handled by listwise deletion, yielding a final estimation sample of 2356 individuals who participated in both VIC surveys (Germany: $n = 1268$, United Kingdom $n = 1088$; see Appendix, Table A2, for descriptive statistics).

3.2 Measures

Life satisfaction. Respondents were asked to rate their overall life satisfaction ("All things considered, how satisfied are you these days with your life as a whole?") on a 10-point scale from 1 "completely dissatisfied" to 10 "completely satisfied." We additionally constructed a measure for individual changes in life satisfaction by subtracting the score in 2020 from the score in 2021. Values between −9 and −1 were coded as "less satisfied," a score of 0 as "no change," and scores between 1 and 9 as "more satisfied". In both, the "less satisfied" and the "more satisfied" group, the modal value was a one-point change in life satisfaction.

Human and economic capital included a measure of educational level that was based on the International Standard Classification of Education (ISCED) and recoded into lower, intermediate, and higher level. Economic capital was measured as the (quartiles of the) logarithm of the net equivalent household income.

Social capital. A dummy variable indicated whether respondents have a partner, another dummy variable whether they have children. To operationalize generalized social trust, the VIC survey asked respondents how much they trust people they are meeting for the first time on a four-point scale ranging from 1 "trust completely" to 4 "do not trust at all." The variable was dichotomized into "low trust" and "high trust." We further considered respondents' church attendance ("Apart from weddings and funerals, about how often did you usually attend religious services before the COVID-crisis?"). Respondents who reported attending church at least once a month are categorized as "regularly" attending church, whereas all others ("only on special holidays," "once a year," "less often," or "never or practically never") are categorized as "not regularly."

Psychological capital comprised three indicators. We first assessed mental problems using the well-known Patient Health Questionnaire (PHQ-4; Kroenke et al., 2009). Respondents were asked "Over the last two weeks, how often have you been bothered by the following problems?": (a) feeling nervous, anxious, or on edge, (b) not being able to stop or control worrying, (c) feeling down, depressed, or hopeless, and (d) having little interest or pleasure in doing things, on a scale from 0 "not at all" to 3 "nearly every day." We constructed a sum score of mental problems that was categorized from 0 to 3 as "none," from 4 to 6 as "mild," from 7 to 9 as "moderate," and from 10 to 12 as "severe." Second, we included empathic concern, one dimension from the interpersonal reactivity index (Davis, 1980). The items include the statements "I often have tender, concerned feelings for people less fortunate than me," "When I see people being taken advantage of, I feel kind of protective towards them," "I am often

quite touched by things that I see happen," and "I would describe myself as a pretty soft-hearted person." Each statement was rated on a five-point scale from 1, "does not describe me at all," to 5, "describes me perfectly well." We constructed a row mean score of these items so that higher values indicated a higher level of empathic concern. Third, we included the dimension emotional stability from the Big Five Inventory (Rammstedt et al., 2017), based on the items "I am someone who gets nervous easily" and "I am someone who is relaxed, handles stress well," each rated on a five-point scale ranging from 1, "disagree strongly," to 5, "agree strongly." The negative item was reversed before constructing a row mean score so that higher values indicate a higher level of emotional stability.

Control variables. Last, all models controlled for a number of sociodemographic characteristics known to be relevant for life satisfaction (e.g., Delhey & Steckermeier, 2016): gender (male or female); age group (under 30 years, 30–44 years, 45–64 years, and 65 years and older); place of residence (rural, smaller cities and suburbs, and big cities); and region (a dummy indicating whether respondents live in West or East Germany, and in England or Scotland, Wales, and Northern Ireland, respectively).

3.3 Analytical *Strategy*

The analyses were conducted in three steps: First, we analyzed how levels and inequality of life satisfaction developed from 2020 to 2021 for the total population (addressing H1). Life satisfaction inequality was examined through (a) the standard deviation (SD), (b) the percent maximum standard deviation (Delhey & Kohler, 2011), and (c) Jenkins's upward-looking status measure index (Jenkins, 2020). The latter two measures have a theoretical range from 0 (everyone is equally satisfied or dissatisfied) to 1 (perfectly unequal life satisfaction). The percent maximum standard deviation corrects the raw SD for the minimum and maximum value of the scale, resulting in "the standard deviation from the theoretical maximum" (Delhey & Kohler, 2011, p. 746). Jenkins's upward-looking status measure aggregates the distance of individuals' status, that is, their current life satisfaction value, to the maximum status, that is, the highest possible life satisfaction value (Grimes et al., 2023; Jenkins, 2019, 2020). Because there is currently no gold standard for measuring life satisfaction inequality, we constrast various indices.

In the second step, we employed repeated cross-sectional OLS regressions to analyze the impact of human and economic, social, and psychological capital on life satisfaction during the pandemic (addressing H2). Because we were mainly interested in the *extent* of the structuration of well-being generated by these resources, we compared the variance in individual life satisfaction that is explained by various types of capital—technically speaking, the R-squared. The higher the R-squared, the more clear-cut the structuration of well-being within a population is. To assess whether the explanatory power of the various forms of capital differs significantly, we tested for the equality of correlation coefficients (2020 vs. 2021), following the approach suggested by Caci (2000). In the third and final step, we focused more narrowly on changes in individuals' life satisfaction during the pandemic. We first describe changes in life satisfaction from 2020 to 2021 for subpopulations resulting from differences in resource endowments. We then utilize multinomial logistic regression modeling to unveil the

individual characteristics determining the chance/risk of belonging to the group that gained or lost life satisfaction during this time period (addressing H3).

4 Results

4.1 Levels and Inequality in Life Satisfaction

Table 1 shows the average levels and inequality of life satisfaction for Germany and the United Kingdom in 2020 and 2021. Average satisfaction decreased marginally in both countries within the first year of the pandemic: from 6.89 in 2020 to 6.74 in 2021 in Germany, and from 6.85 in 2020 to 6.59 in the United Kingdom. The inequality indices indicate a moderate dispersion of inequality as they are all about at the midpoint of their respective value ranges. Bar the Jenkins index for Germany, the inequality indices show that the dispersion of life satisfaction across individuals increased slightly between 2020 and 2021. Overall, the findings lend some support for Hypothesis 1 for both countries—even though the increase was really small.

4.2 The structuration of Life Satisfaction by Types of Capital

Germany. To quantify the association between capital endowment and life satisfaction under the pandemic conditions, we compared the cross-sectional relationship between human and economic, social, and psychological capital and life satisfaction in 2020 and 2021. In Germany (see Models M1 and M2 in Table 2), lower education is related to lower life satisfaction, while higher income is associated with higher life satisfaction. With regard to social capital, only having a partner is robustly—that is, in both years—positively related to overall satisfaction. In contrast, being more trustful and attending church regularly is associated with higher life satisfaction only in 2020 (and not in 2021), while the reverse is true for being a parent: Parents have a higher life satisfaction only in 2021 (and not in 2020). From our measures of psychological capital, mild, moderate, and severe mental problems are related to lower levels of life satisfaction, and emotional stability with higher levels. In 2020, higher empathic concern was related to higher life satisfaction; this relationship, however, dissolved in the second year of the pandemic.

To systematically assess the extent to which Germans' life satisfaction is structured by capital endowments, we examined the adjusted R-squared of the regression models just reported. All individual characteristics taken together—that is, the various forms of capital and sociodemographic characteristics—explained 29.2% of the variance in life satisfaction in 2020, compared to 26.3% in 2021. If anything, overall there was a mild tendency of a destructuration of life satisfaction, rather than a stronger structuration. To unveil the explanatory power of the three forms of capital, we estimated separate regression models for human and economic capital, social capital, and psychological capital, thus yielding their gross effects (see Table 3, DE column). Unsurprisingly, the explanatory power of psychological capital is particularly strong (22.4% in 2020 and 20.4% in 2021), about twice as high as for human and economic capital, and four times as high as for social capital (cf. Table 3). Contrary to our expectation, none of the types of capital structure life satisfaction to a significantly greater extent in the second year of the pandemic compared to the first.

Table 2 Effect of individual characteristics on overall life satisfaction in Germany and the UK (OLS regressions)

	DEU ($n = 1{,}268$)				UK ($n = 1{,}088$)			
	Life satisfaction 2020		Life satisfaction 2021		Life satisfaction 2020		Life satisfaction 2021	
	M1		M2		M3		M4	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE
Human and Economic capital								
Education								
Lower	−0.526***	0.133	−0.299*	0.143	−0.107	0.140	0.085	0.144
Intermediate	(Ref.)		(Ref.)		(Ref.)		(Ref.)	
Higher	−0.102	0.13	−0.087	0.138	−0.094	0.117	0.121	0.141
Income quartiles								
Low	(Ref.)		(Ref.)		(Ref.)		(Ref.)	
Low medium	0.293	0.15	0.529***	0.153	0.390**	0.14	0.427**	0.147
High medium	0.689***	0.144	0.886***	0.159	0.433**	0.151	0.308*	0.157
High	0.926***	0.152	1.077***	0.169	0.460**	0.154	0.547***	0.158
Social capital								
Partner (Ref. no partner)	0.455***	0.111	0.439***	0.121	0.529***	0.112	0.474***	0.118
Parent (Ref. not parent)	0.191	0.134	0.295*	0.144	0.067	0.138	0.004	0.144
Social trust (Ref. low trust)	0.300*	0.119	0.055	0.126	0.332**	0.103	0.540***	0.108
Church attendance (Ref. not regularly)	0.388*	0.163	0.171	0.182	0.242	0.152	0.253	0.158
Psychological capital								
Mental problems								
None	(Ref.)		(Ref.)		(Ref.)		(Ref.)	
Mild	−0.982***	0.123	−1.076***	0.128	−1.019***	0.134	−1.000***	0.141
Moderate	−1.664***	0.196	−1.701***	0.188	−1.120***	0.169	−1.393***	0.171
Severe	−2.757***	0.243	−2.504***	0.236	−1.949***	0.219	−2.377***	0.211
Emotional stability	0.373***	0.06	0.332***	0.063	0.409***	0.056	0.330***	0.059
Empathic concern	0.222***	0.067	0.101	0.071	0.273***	0.065	0.168*	0.068
General sociodemography	✓		✓		✓		✓	
adj. R^2	0.292		0.263		0.296		0.303	

*$p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

United Kingdom. We estimated the identical cross-sectional regression models for the United Kingdom (see Models M3 and M4 in Table 2). Most resources are linked to life satisfaction in a similar way to Germany: Higher income, having a partner, and high social trust are associated with higher satisfaction in both years, as are higher emotional stability and higher empathic concern. Mental problems and life satisfaction are negatively and strongly related. The most evident difference to Germany is that in the United Kingdom low education does not imply a "satisfaction penalty."

Turning now to the extent of structuration over the course of the pandemic, we do not see a stronger social structuration in the United Kingdom either. All individual characteristics together explained 29.6% of the variance in life satisfaction in 2020, and 30.3% in 2021. Examining the capital-specific models, as in Germany, none of the capital types had a higher explanatory power in the second year of the pandemic, compared to the first year

Table 3 Explained variance in life satisfaction in Germany and the UK

	DE ($n = 1{,}268$)		UK ($n = 1{,}088$)	
	2020	2021	2020	2021
Full model	29.2	26.3	29.6	30.3
Human and economic capital	9.3	9.1	7.0	6.7
Social capital	4.8	4.5	9.7	9.0
Psychological capital	22.4	20.4	26.3	26.3

Adjusted R^2 in percent

The human and economic capital model includes the variables education and income quartiles. Further controlled for sociodemographic characteristics

The social capital model includes the variables having a partner, having a child, social trust, and church attendance. Further controlled for sociodemographic characteristics

The psychological capital model includes the variables mental problems, emotional stability, and empathic concern. Further controlled for sociodemographic characteristics

(see Table 3, UK column). The explanatory power of psychological capital remained high at 26.3%, that of social capital at roughly 9%, and that of cultural and economic capital at roughly 7%. In sum, the results for both countries contradict our initial assumption that resource endowments played a greater role as the pandemic progressed than it did at the outset of the pandemic (H2).

4.3 Individual Changes in Life Satisfaction During the Pandemic

Germany. In the final step of the analysis, we focused on the changes *within individuals* from one year to the other. The left-hand panel in Fig. 1 displays the proportion of German respondents with increasing, stable, and decreasing life satisfaction, for the total population and subpopulations according to personal capital endowment. The overall distribution in Germany is fairly even: About a third (37%) were less satisfied in the second year of the pandemic, another third (33%) were similarly satisfied, and the final third (30%) were more satisfied. With a 7 % point (p.p.) difference between "more satisfied" and "less satisfied," the net balance of change is slightly negative (−7 p.p.). Importantly, this is true for nearly all subpopulations studied, so that the stacked bars shown in Fig. 1 look quite similar across groups. Those who had high levels of social trust (−15 p.p.) and high levels of empathic concern (–22 p.p.) in 2020 deviate somewhat, since their net balance of change is more negative. There were only three subpopulations in Germany with a positive net balance of change: those who had severe mental problems in 2020 (+12 p.p.), those with low education (+4 p.p.), and those with low levels of empathic concern (+3 p.p.).

With multinomial regression analysis we formally tested which individual characteristics (capital endowment in 2020) predicted the risk/chance of individuals being either *less* or *more* satisfied in the second year of the pandemic, compared to those Germans with stable life satisfaction (Table 4, Model M5). The model confirms that there were only a few *systematic* changes, exclusively related to psychological capital: Those with mild or severe mental problems in 2020 had a significantly higher chance of being more satisfied in 2021—indicating a mental health relief. Those with moderate mental problems in 2020 were simultaneously at a higher risk of being more and less satisfied with their lives in

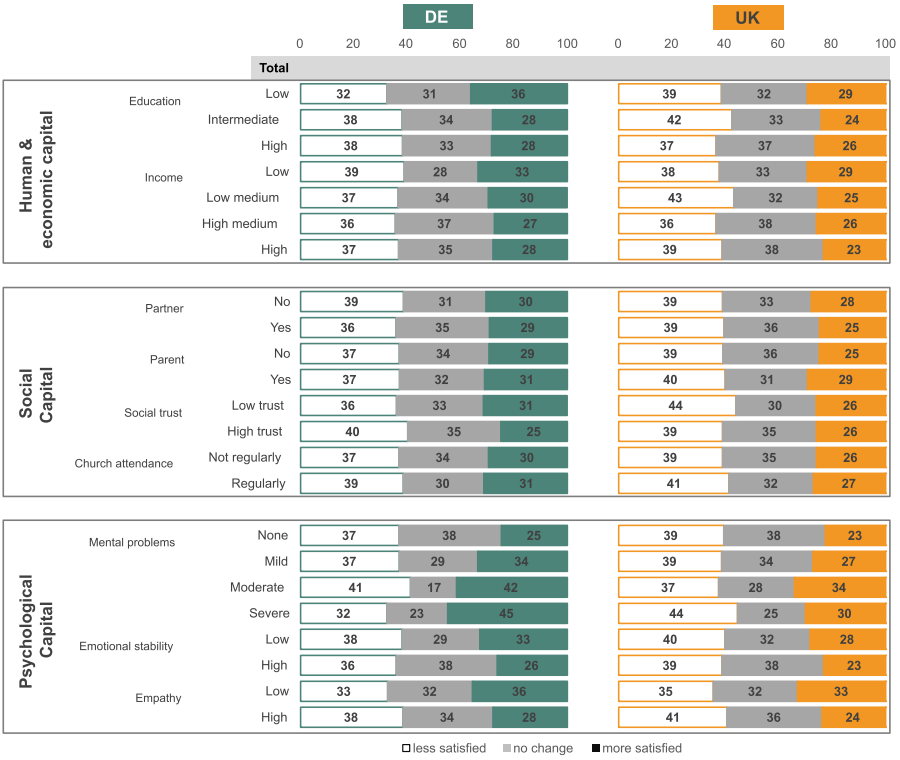

Fig. 1 Longitudinal changes in individual life satisfaction 2020–2021, Germany and UK (in %). *Note:* Weighted with population weight

2021, suggesting divergent trajectories of life satisfaction within this subpopulation. In contrast, neither the disposition of human and economic capital nor that of social capital in the first pandemic year was associated with being in the "more satisfied" or "less satisfied" group in 2021. These findings were confirmed by a fixed-effects panel regression model that we used as a robustness check (see Model M7 in Table A3 in the Appendix).

United Kingdom. The right-hand panel in Fig. 1 displays the proportions of individuals from the United Kingdom who were less (39%), equally (35%), and more (26%) satisfied with their life in 2021, compared to 2020 (net balance of change: – 13 p.p.). As can be easily seen from the figure, the net balance was even more uniform than in Germany, with negative scores for all UK subpopulations. The life satisfaction of individuals with intermediate educational level, low medium income, low social trust (–18 p.p. each), without mental problems, and those with high empathic concern (–17 p.p. each) was affected by the pandemic slightly more strongly; those who had moderate mental problems in 2020 (–3 p.p.) and those with low empathic concern (–2 p.p.) were affected slightly less.

For the United Kingdom, too, the multinomial logistic regression models (Table 4, Model M6) indicate few systematic changes. Human and economic capital in 2020 was unrelated to changes in life satisfaction. Among the social capital indicators, higher levels of social trust were associated with lower risk of being in the less satisfied group. With regard to psychological capital, only having moderate mental problems was associated

Table 4 Effect of individual characteristics on differences in life satisfaction in Germany and the UK (multinomial logistic regression; Ref.: no change)

Lagged personal resources	Changes in life satisfaction between 2020 and 2021 (DE)				Changes in life satisfaction between 2020 and 2021 (UK)			
	M5				M6			
	Less satisfied		More satisfied		Less satisfied		More satisfied	
Human and Economic capital								
Education								
Lower	0.983	0.180	1.389	0.262	1.029	0.209	1.263	0.283
Intermediate	(Ref.)		(Ref.)		(Ref.)		(Ref.)	
Higher	1.026	0.180	0.989	0.188	0.759	0.128	1.077	0.202
Income quartiles								
Low	(Ref.)		(Ref.)		(Ref.)		(Ref.)	
Low medium	0.830	0.171	0.905	0.197	1.480	0.303	1.077	0.240
High medium	0.755	0.149	0.844	0.177	1.156	0.262	0.972	0.237
High	0.739	0.152	0.823	0.181	1.226	0.265	0.831	0.198
Social capital								
Partner (Ref. no partner)	0.903	0.137	0.864	0.139	1.199	0.193	1.021	0.179
Parent (Ref. not parent)	0.985	0.182	1.105	0.217	1.059	0.212	1.061	0.232
Social trust (Ref. low trust)	1.050	0.167	0.741	0.132	0.564***	0.083	0.743	0.121
Church attendance (Ref. not regularly)	0.974	0.220	1.061	0.253	1.175	0.256	1.133	0.275
Psychological capital								
Mental problems								
None	(Ref.)		(Ref.)		(Ref.)		(Ref.)	
Mild	1.241	0.205	1.896***	0.325	1.039	0.191	1.317	0.269
Moderate	2.359**	0.711	3.453***	1.062	1.146	0.277	1.864*	0.471
Severe	1.237	0.434	2.474**	0.846	1.213	0.379	1.821	0.605
Emotional stability	1.126	0.138	0.885	0.115	1.169	0.143	0.972	0.131
Empathic concern	1.090	0.102	0.913	0.088	1.056	0.101	0.876	0.091
General sociodemography	✓		✓		✓		✓	
N	1,268				1,088			
Pseudo R^2	0.031				0.029			

Exponentiated coefficients; standard errors in second column

*$p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

with a significantly higher chance of being in the more satisfied group. We again applied fixed-effects regression modeling (see Model M8 in Table A3 in the Appendix) as a robustness check and found that changes in mental problems were related to decreasing life satisfaction; additionally, a change from low to intermediate educational level was associated with decreasing life satisfaction.

Overall, the findings for both countries contradict rather than support Hypothesis 3. Contrary to expectations, the different endowments with human, economic, and social

capital in 2020 did not shape the *development* of life satisfaction; only psychological capital, mental problems in particular, played a role in this respect.

5 Discussion

Employing data for Germany and the United Kingdom from the Values in Crisis (VIC) project (2020/2021), we had two research goals concerning people's well-being during the COVID-19 pandemic: first, to investigate the scale of life satisfaction inequality cross-sectionally (2020 and 2021), including its structuration by different types of capital; and second, to identify longitudinally whether endowments with human and economic, social, and psychological capital *in the early stage of the pandemic* promoted or inhibited life satisfaction changes within individuals as the pandemic progressed (from 2020 to 2021).

As regards the first research goal, the *dispersion* of life satisfaction increased slightly within the German and UK populations according to most of the inequality measures utilized. Given the tiny increase, however, it would be an exaggeration to say that the pandemic really *deepened* inequality in evaluative well-being, but the pandemic can certainly not be deemed a leveler either. In terms of the *structuration* of life satisfaction during the pandemic, the key finding of this study is that as the pandemic progressed and worsened, life satisfaction did not become *more* tightly associated with—and in this sense structured by—the various forms of capital. Yet, a better resource endowment is associated with higher life satisfaction, with psychological capital being most important in both of the years covered.

With respect to the second research goal, we found that about one third of individuals reported increases, stability, or decreases in life satisfaction from spring 2020 to 2021, with individuals from the United Kingdom reporting decreases slightly more often than those from Germany. While this—almost—even distribution of trajectories indicates differential success of individuals in their attempt to weather the pandemic, their initial endowment with human, economic, and social capital hardly played a role. Only psychological capital mattered in this longitudinal perspective, the load of mental problems in particular. Seen in conjunction with research that documented a rise in psychological distress, worldwide (cf. Wang et al., 2020) and in both countries examined in this paper (for Germany, Schmidtke et al., 2021; for the United Kingdom, Banks & Xu, 2020), this finding is more than plausible.

Although some of our findings are backed by previous research (see, for example, the cross-sectional analyses by Helliwell et al., 2020, 2021), they are nevertheless puzzling as they do not support the widespread narrative of the pandemic as an amplifier of social inequalities—which had also guided our hypotheses. Eurofound, an EU agency, saw a "gulf that opened up between those for whom the lockdown measures had little material impact and those who saw their economic bedrock crumble" (Eurofound, 2021, p. 58). At least for evaluative well-being, we found few indications of such a gulf. Likewise, according to previous research, various sociodemographic groups were particularly disadvantaged by the pandemic and its management, for very different reasons in each case: young adults (Entringer et al., 2020; McKinlay et al., 2022), students (Salmela-Aro et al., 2022), workers in short-time work schemes (Schmidtke et al., 2021), and women (Bertogg et al., 2021; Zoch et al., 2021). Yet we hardly see these disadvantages in the life satisfaction dispersion and gaps we analyzed. One possibility is that we mainly focused on capital endowments,

rather than on specific sociodemographic groups. The sociodemographic characteristics we included in our models as controls, though, gave no indication of growing satisfaction gaps along these lines. The more likely explanation, therefore, is that these pandemic-induced disadvantages do not fully filter through to life satisfaction.

In view of their prominent role in the stress process model, another puzzling finding is that the endowment with human, economic, and social capital was not systematically linked to within-person life satisfaction development—especially when considering that the pandemic *worsened* during our study period. Only psychological capital mattered. The very nature of the pandemic as a collective, rather than individual, crisis may provide an explanation for the difference: The threat of COVID-19 to existential security was nationwide and largely blind to socioeconomic differences—similarly to the "democratic" modernization risks Ulrich Beck has discussed in his *risk society* (Beck, 1992). Even though the pandemic caused economic problems (Eurofound, 2021; Gambacorta et al., 2021; Menta, 2021), and social distancing increased feelings of loneliness (Okabe-Miyamoto & Lyubomirsky, 2021), the main challenge was of a *psychological* nature: coping with the distress resulting from perceived threat and perceived uncertainty (cf. Freeston et al., 2020). Dealing with this distress successfully seems to have been a matter of psychological resilience rather than of socioeconomic resources. Not all manifestations of psychological capital were equally beneficial, though: For example, being an empathetic person seems not to be an asset in a public health crisis. What needs explanation, however, is why social capital, and especially family-related social capital, which typically comes with emotional support, was not *more* beneficial during the pandemic. One explanation is that under pandemic conditions, the strong ties primary social networks provide can also have specific downsides (cf. Hudde et al., 2023): concerns about the physical and psychological health of partners and children, as well as a disruption of the work-life balance through homeschooling and the temporary closing of kindergartens.

This interpretation should not be misunderstood as a plea that well-being research should care less about socioeconomic resources, quite the contrary: Our cross-sectional results corroborate that *all* forms of capital—human, economic, social, and psychological capital—are systematically associated with higher evaluative well-being. These findings dovetail with seminal quality-of-life theories that converge in the idea that the resources individuals can utilize enable them to consciously direct their lives (Erikson, 1993; Sen, 1993). It is not surprising that psychological capital is the strongest predictor, as it is conceptually closer to overall well-being than the other types of capital.

It goes without saying that the study at hand is not without limitations. First, our data do not allow us to properly measure physical health, as much as we would have liked to have taken this variable into account. Future research should aim to incorporate a broader range of what Veenhoven (2012) calls "life abilities," such as physical health and intellectual skill. Second, like most survey projects that were initiated as a *response* to the outbreak of the COVID-19 pandemic, we do not have a pre-pandemic benchmark that would allow us to trace the impact of the outbreak on life satisfaction. Third, we only explored evaluative well-being. Examining other subjective well-being measures, e.g., domain satisfaction or emotional well-being, would be helpful in assessing subjective well-being inequality under the pandemic conditions more comprehensively. It is likely that different well-being components have different sensitivities regarding crisis-induced inequalities. Finally, evidence from other countries, ideally from other world regions, is needed to get a sense of how specific the results of this study are to affluent European countries.

Layard (2005) has repeatedly argued that mental problems are "probably the largest single cause of misery in Western societies" (p. 181), and this study supports this statement. Given our key findings, two policy implications are self-evident: In times of acute and deep crisis (such as the COVID-19 pandemic), minimizing the crisis-induced psychological burden should take priority. Low-threshold mental healthcare services, such as easily understandable and accessible information, mental health hotlines, or low-price consultation options, are important to prevent rising psychological distress, and thus to enable more people to maintain or regain a decent life satisfaction. In times of normalcy, public policy should invest in citizens' psychological capital in order to make societies more resilient—just in case the next big crisis is just around the corner.

Appendix

Table A1 Sample information of VIC data, compared to population statistics

		Germany			UK		
		Population (%)	Sample (%)		Population (%)	Sample (%)	
			Weighted	Unweighted		Weighted	Unweighted
Age	Under 25	13.20	13.20	5.70	11.90	11.90	5.30
	25–34	15.90	15.90	12.73	17.00	17.00	14.17
	35–44	17.90	17.90	17.66	17.60	17.60	15.57
	45–54	21.70	21.70	25.08	17.60	17.60	19.83
	55–64	16.80	16.80	20.16	14.90	14.90	18.00
	65 +	14.50	14.50	18.67	21.00	21.00	27.13
	Total	100.00	100.00	100.00	100.00	100.00	100.00
Sex	Male	50.10	50.10	50.70	48.28	48.30	54.43
	Female	49.90	49.90	49.30	51.72	51.70	45.57
	Diverse	0.00	0.00	0.00	0.00	0.00	0.00
	Total	100.00	100.00	100.00	100.00	100.00	100.00
Education	Low	19.48	19.50	21.25	19.15	19.15	20.09
	Middle	55.34	55.30	55.00	40.25	40.25	40.26
	High	25.17	25.20	23.75	40.60	40.60	39.65
	Total	100.00	100.00	100.00	100.00	100.00	100.00

Table A2 Descriptive statistics for Germany and the UK

	Min	Max	Germany		UK	
			2020	2021	2020	2021
			Mean	Mean	Mean	Mean
Life satisfaction	1	10	6.89	6.74	6.85	6.59
Education						
Low	0	1	0.19	0.18	0.19	0.34
Intermediate	0	1	0.55	0.57	0.40	0.22
High	0	1	0.25	0.25	0.41	0.44
Income						
Low	0	1	0.29	0.26	0.28	0.29
Low medium	0	1	0.22	0.26	0.28	0.27
High medium	0	1	0.25	0.23	0.22	0.21
High	0	1	0.24	0.25	0.22	0.23
Partner (Ref.: no partner)	0	1	0.56	0.55	0.60	0.60
Parent (Ref.: no parent)	0	1	0.24	0.24	0.27	0.27
General social trust (Ref.: low trust)	0	1	0.26	0.25	0.44	0.45
Church attendance (Ref.: not regularly)	0	1	0.11	0.10	0.15	0.14
Mental problems						
None	0	1	0.58	0.53	0.51	0.49
Mild	0	1	0.28	0.28	0.27	0.26
Moderate	0	1	0.09	0.12	0.14	0.16
Severe	0	1	0.05	0.07	0.08	0.09
Emotional stability	0	4	1.99	1.99	2.16	2.16
Empathic concern			2.69	2.69	2.71	2.71
Sex (Ref.: male)	0	1	0.50	0.50	0.52	0.52
Age						
Under 30 years	0	1	0.20	0.20	0.19	0.19
30–44 years	0	1	0.28	0.28	0.30	0.30
45–64 years	0	1	0.39	0.39	0.34	0.34
65 years and older	0	1	0.14	0.14	0.18	0.18
Place of residence						
Rural	0	1	0.28	0.28	0.16	0.16
Smaller city/suburb	0	1	0.50	0.50	0.68	0.68
Big city	0	1	0.21	0.21	0.17	0.17
Region (Ref.: DEU West/ENG)	0	1	0.21	0.21	0.16	0.16
n			1268		1088	

Weighted with population weight

Table A3 Fixed-effects regression of human, economic, social, and psychological capital on life satisfaction in Germany and the UK

	DEU ($n=1268$)		UK ($n=1088$)	
	M7		M8	
	Coef	SE	Coef	SE
Personal resources				
Human and economic capital				
Education				
Lower	(Ref.)		(Ref.)	
Intermediate	−0.189	0.179	−0.332**	0.107
Higher	0.131	0.214	−0.105	0.150
Net equivalent income (log)	0.095	0.122	0.149	0.092
Social capital				
Partner (Ref. no partner)	−0.317	0.207	0.427	0.306
Social trust	−0.038	0.076	0.116	0.078
Church attendance	0.049	0.047	0.013	0.046
Psychological capital				
Mental problems	−0.156***	0.019	−0.146***	0.018
General sociodemography	✓		✓	

*$p<0.05$, ** $p<0.01$, *** $p<0.001$

Funding This paper is part of the research project "Values in Crisis: A Crisis of Values? Moral Values and Social Orientations under the Imprint of the Corona Pandemic," funded by Volkswagen Foundation, grant no. 99/127.

Availability of data and material The "Values in Crisis" data is available as scientific use file. *Data*: Aschauer, Wolfgang; Seymer, Alexander; Bodi-Fernandez, Otto; Herzog, Manfred; Hadler, Markus; Höllinger, Franz; Bacher, Johann; Welzel, Christian; Boehnke, Klaus; Delhey, Jan; Deutsch, Franziska; Eichhorn, Jan; Kühnen, Ulrich; Moraes, Diego; Kemer, Thaíse; Gonzalez, Ricardo; Salvatierra, Valentina; Fuentes, Adolfo; Chang, Yu-tzung; Chu, Yun-han; Huang, Osbern; Casas, Andres; Mendez, Nathalie; Pachulia, Merab; Gulashvili, Nino; Demertzis, Nicolas; Papadoudis, George; Linardis, Apostolos; Koniordos, Socratis; Aranitou, Valia; Huang, Yi-Hui Christine; Mungiu-Pippidi, Alina; Abels, Christoph M.; Taniguchi, Naoko; Akaliyski, Plamen; Park, Joonha; Dentsu Institute; Rakisheva, Botagoz; Mazhitova, Ainur; Ashkenova, Gulden; Cho, Youngho; Lee, Nam Young; Kim, Yeun-Sook; Kim, Jibum; Heo, Jongho; Shin, Inchol; Shim, Jae-Mahn; Kim, Ocktae; Kim, Sori; Riyaz, Aminath; Moosa, Sheena; Rahman, Raheema Abdul; Musthafa, Hawwa Shiuna; Siemienska, Renata; Domaradzka, Anna; Matysiak, Ilona; Ponarin, Eduard; Sokolov, Boris; Klimova, Aigul; Puranen, Bi; Axelsson, Tomas; Stier, Jonas, 2021, Values in Crisis International (SUF edition), https://doi.org/10.11587/LIHK1L, AUSSDA, V2, UNF:6:Z8Q+l1l5E8zWyeAfKkiydw== [fileUNF]

Code availability Stata Code is available on request, custom code.

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

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