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RESEARCH PAPER

Social Comparisons Under Pandemic Stress: Income Reference Groups, Comparison Patterns, and the Subjective Well-Being of German Students

Antje Jantsch[1] · Gertrud Buchenrieder[2] · Thomas Dufhues[1] · Judith Möllers[1]

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Abstract
People use social comparisons to reduce uncertainty when facing new or stressful situations. This study explores how a stressful experience, the COVID-19 pandemic, changed how people compare their income. It relates these changes to subjective well-being (SWB). We use a repeated cross-sectional dataset of students at two German universities from before and during the pandemic. A novel survey instrument is employed to identify individualized reference groups used for income comparison and to analyze whether the comparison pattern changed. Our results reveal that, while there was little change in the size of the reference groups, there was some difference in the group composition. During the pandemic, survey respondents were more likely to select two types of individuals into their reference groups: relatives and people they only knew from social media. Income comparisons were beginning to have a negative association with SWB, while the relation had been positive before the pandemic. Moreover, upward income comparisons increased.

Keywords COVID-19 · Pandemic · Reference group · Comparison pattern · Subjective well-being

1 Introduction

Richard Easterlin was one of the first economists to link subjective well-being (SWB) to income. Contrary to expectation, Easterlin (1974: 116) found no associated rise in reported SWB as the average level of US citizens' incomes rose considerably over time. This has become known as the 'Easterlin paradox'. It is explained by the existence of income comparisons. The underlying idea is that people compare their incomes with those of their peers, which in turn affects their SWB (Clark et al., 2008: 99). Easterlin (2001: 481) argues that the positive effect on SWB of an individual's increase in income is offset by

✉ Thomas Dufhues
dufhues@yahoo.de

[1] Leibniz Institute of Agricultural Development in Transition Economies (IAMO), External Environment for Agriculture and Policy Analysis, Halle (Saale), Germany

[2] Institute of Sociology and Economics, Universität Der Bundeswehr München, Munich, Germany

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the negative effect of a general increase in incomes. Thus, SWB is not only determined by the absolute income level of an individual but depends strongly on an individual's relative position within the income stratum of their reference group (Hopkins, 2008: 351). This is recognised in the theoretical concepts of relative deprivation, relative status, and the social frame of reference (Clark & Senik, 2010: 407; Perez-Asenjo, 2011: 1413).

Individuals perceive their relative position through comparisons. Diener and Fujita (1997: 330) highlight that people actively select individuals for comparisons. However, until recently, empirical work used a priori and externally defined reference collectives, such as people living in the same country or work colleagues. Using such reference collectives does not reflect the true composition of the reference group and, thus, may bias results (Hauret & Williams, 2019: 325). In this paper, we apply a novel survey instrument developed by Dufhues and colleagues that identifies the endogenously determined individual reference groups that people have in mind when they make income comparisons (Dufhues et al., 2023).

One motivation for social comparisons is the reduction of uncertainty (Smith & Arnkelsson, 2000: 47). According to Wills (1981: 245), new situations and/or stressful experiences, such as the COVID-19 pandemic, make people more likely to compare themselves with others (Burchell & Yagil, 1997: 745; Schneider & Schupp, 2014: 771). This may also affect who people choose to compare themselves to and how (i.e., the direction). Income comparisons may be made with those who are better off as well as with those who are worse off, and the purpose of the income comparison can influence the direction (Falk & Knell, 2004: 417). Stress may push people to compare themselves to those who are worse off (Buunk et al., 1997).

Upward comparisons are a preferred choice when faced with the uncertainties of a life transition (Lockwood et al., 2012b: 985). During the pandemic, economic life was strongly suppressed by public health strategies to control the spread of the virus, which increased both the uncertainty and the livelihood stress of many people (Aucejo et al., 2020:1; Bavel et al., 2020: 460; Sibley et al., 2020: 620). Employees in the service sector (gyms, movie theatres, restaurants, pubs, etc.), who are often students, were under the most pressure (Aucejo et al., 2020:1; Grömling et al., 2022: 52; Lörz & Becker, 2023: 24). Social comparisons may also have been affected by the increased use of online social interactions during the pandemic. Those working from home or participating in distance learning may have spent more time online, especially engaging in social media (Ruggieri et al., 2021: 1). This means that the number of virtual social contacts increased. On the one hand, the increased use of online social interactions may have widened the pool of reference individuals. On the other hand, social distancing may have reduced or at least changed the pool of reference individuals for social comparisons. Finally, each person had a different perception of the economic effects of the pandemic. It is reasonable to assume that strong economic worries increased the effect of income comparisons on SWB.

Few economic studies provide empirical evidence on income comparisons and, in particular, on individual reference groups. Moreover, to the best of our knowledge, no study has explored the effects of COVID-19 on individual reference group compositions and income comparison patterns (i.e. the direction of income comparison) in relation to SWB. Thus, the added scientific value of this paper is to contribute to the economic literature on income comparisons and comparison patterns by providing insights into individual income reference groups empirically measured with a novel survey instrument. Further, the survey instrument allowed to investigate individual reference group composition changes during a stressful time, the COVID-19 pandemic for a unique repeated cross-sectional student dataset. The objectives of this paper are to investigate whether the pandemic changed a) the

reference group size and composition, (b) the association between income comparison patterns and SWB, and (c) the effect of increased economic worries on this association during the pandemic.

2 Brief Literature Review

This section briefly summarises the key literature on reference groups for social comparisons, specifically income comparisons. We highlight knowledge of the direction of income comparisons and how upward or downward comparisons are theoretically linked to SWB. However, there is little empirical research in economics using self-reported reference groups and even less in which respondents also report the direction of the income comparison. This means that our research is, to a large degree, in uncharted waters.

A reference group, first coined by the sociologist Herbert Hyman (1942), is the collective to which individuals refer when making comparisons in the process of their self-appraisal. People actively select the individuals to whom they compare themselves. This is the basis for the individual variation in the composition of reference groups, which can be relatively narrow (consisting of e.g. close friends) or very broad (including e.g. personally unknown celebrities). Nevertheless, most people have a limited range of individuals they compare themselves to (Bellani, 2012: 496, 499). Moreover, not every social comparison is equally relevant for the comparer to become a point of reference. Often, social comparisons are made to people who live close by or with whom close interaction exists (Diener & Fujita, 1997: 330). For example, in Japan, friends were identified as the most important reference group (Yamada & Sato, 2013: 40). In a European context, the most important reference group was work colleagues (Clark & Senik, 2010: 576). However, evidence of how individuals choose their reference group for income comparison is still lacking (Clark & Senik, 2010: 573; Clark et al., 2013: 1; Gugushvili, 2020: 439; Senik, 2009: 409).

While little is known about the size and composition of reference groups, the characteristics of an individual's reference group can likely change due to endogenous changes (e.g. attitudes) and exogenous shocks (e.g. unemployment). An exogenous shock may modify who people are physically exposed to. For example, sudden unemployment can disrupt contact with colleagues. The COVID-19 pandemic, through its lockdowns and enforced social distancing, may have shifted the focus of comparisons to reference persons that individuals were exposed to at home, such as relatives. Moreover, during the pandemic, people relied more on social media for information, connection, and comparisons (Ruggieri et al., 2021: 1; Yue et al., 2022: 3). Thus, people may have compensated for the loss of physical reference persons, for instance at work, with reference persons identified in social media, even if they didn't personally know them.

It is well documented in the literature that SWB is affected by income comparisons (Cheung & Lucas, 2016: 332). The purpose of this comparison determines the comparison pattern, i.e., whether individuals compare themselves downward or upward (Falk & Knell, 2004, 420–421; Wood & Taylor, 1991: 28). When the purpose of income comparison is self-enhancement, people tend to compare themselves with people who are worse off, which may increase their SWB (Hopkins, 2008: 368; Wills, 1981: 245, 265). For self-improvement, people tend to compare themselves to those who are better off. This may motivate them and cause them to perform better (Wood & Taylor, 1991: 27). Positive outcomes in terms of increased SWB from upward income comparisons are likely to occur when there are prospects for individual development (Senik, 2004: 2101). The assumption

is that individuals use information about their reference group's income to predict their own potential future income, leading to utility derived from the higher incomes of others. This is known as the *tunnel effect* (Akay et al., 2012: 421; Hirschman & Rothschild, 1973: 545). However, upward comparisons can also evoke envy, negatively impacting an individual's SWB (Brockmann & Yan, 2013: 142; Taylor et al., 1983: 27). This is referred to as the relative *deprivation effect*, where individuals feel deprived when comparing themselves to others who have achieved something they desire but do not possess (Runciman, 1966: 9).

Finally, the purpose of comparison, whether presence-orientated self-enhancement, future-orientated self-improvement (Falk & Knell, 2004, 420–421; Wood & Taylor, 1991: 28), or as mentioned before, uncertainty reduction (Smith & Arnkelsson, 2000: 47), may influence the selection of the individuals in the reference group. Presence-orientated self-enhancement may explain why Ruggieri et al., (2021: 5) found that observing others on social networks who appear to be in the same uncomfortable situation increased SWB through a 'misery loves company' effect.

Anglim et al., (2015: 22), for example, highlight a potentially increased within-person variability of SWB in volatile environments, such as physical and social distancing, insecure employment, financial stress, intermittent health issues, and uncertainty and concerns about the future. Commencing in 2020, the COVID-19 pandemic and the public health strategies to control the pandemic have had exactly these destabilizing effects (Bavel et al., 2020: 460; Sibley et al., 2020: 620). While initial longitudinal empirical evidence suggested that at least during the early stages of the pandemic, SWB remained relatively stable (Sibley et al., 2020: 625; Zacher & Rudolph, 2021: 50), SWB declined during the second wave of lockdown measures (Anglim & Horwood, 2021: 1527). Stricter lockdown regulations during the pandemic were associated with declining SWB (Greyling et al., 2021: 25). The literature on the effect of the pandemic on SWB is still emerging, however, a more detailed view of how the COVID-19 pandemic may have altered income comparison patterns is lacking.

3 Methods and Data

3.1 Size and Composition of Individual Reference Groups

To determine the size and composition of individual reference groups for income comparison, we apply a novel survey instrument developed by Dufhues et al. (2023). The survey instrument reveals reference individuals using the *name generator*, which was initially developed to reveal personal networks for social network analysis (McCallister & Fischer, 1978: 131). Respondents were asked to specify individuals to whom they compare their income. These reference individuals did not necessarily have to be personally known to the respondent or important in their personal life. However, they had to be a point of reference for income comparisons for the respondent. After respondents had named up to six reference individuals,[1] they were asked to provide more details about them, including, for instance, their gender and the role relationship (e.g., friend/relative). This part of the survey is called the *name interpreter* (Snijders, 1999: 29). One important question within the name

[1] The number of reference persons was limited from zero (0) to six (6) to avoid survey fatigue.

interpreter is whether the income of each reference person is considered higher, lower, or equal to the respondent's income. This allows to capture the direction of the income comparisons, i.e. whether respondents predominantly compare themselves to individuals with higher incomes (upward comparison), lower incomes (downward comparison), or the same level of income (horizontal comparison).

3.2 Empirical Model

This study examines three core issues. First, it analyses changes in the size and/or composition of individual income reference groups before and about one year into the pandemic. Second, it explores changes in the association between the respondents' income comparison patterns and SWB. Third, it looks in more detail at this association and whether the results are different for respondents who were affected by increased anxiety and worries during the pandemic.

To explore whether the pandemic changed the average size of the reference group (RGS), we perform an OLS regression using the following specification:

$$RGS_i = \beta PAN_i + \mathbf{sco}_i'\delta + \mathbf{x}_i'\kappa + \varepsilon_i, \tag{1}$$

where *RGS* is the number (headcount) of reference persons ranging from zero (0) to six (6). We include a dummy variable indicating whether the interview took place prior to ($\boldsymbol{PAN} = 0$) or during the pandemic ($\boldsymbol{PAN} = 1$).

Capturing individual differences in the intensity of social comparisons seems crucial for understanding the results derived from the analysis of individual reference groups. Comparison intensity may also influence the size of the income reference group. We capture such individual differences with the vector ***sco*** (social comparison orientation) (Gibbons & Buunk, 1999: 129). The vector consists of two variables: 'opinion orientation', i.e. *OPINION* (*What do others think? How do others act in a similar situation to me?*) and 'performance orientation', i.e. *PERFORMANCE* (*How am I performing compared to others?*) (Hemphill & Lehman, 1991: 390). Opinion orientation covers the information-gathering, problem-solving, and goal-oriented aspects of social comparisons. Performance orientation reflects the respondent's status, as it measures how the respondents evaluate themselves compared to others (Gibbons & Buunk, 1999: 145). We apply the 7-point Likert scale developed by Schneider and Schupp (2014: 770), whereby opinion and performance orientation are measured as the average of three single items each. A higher score means that the opinions and the actions of others in a similar situation are more important, and the performance comparison of the respondent with others is more intense, respectively.[2]

The vector $\boldsymbol{x}$ contains control variables for socio-demographic and socio-economic characteristics. Gender was captured as male and non-male (i.e. female and diverse). Marital status is living in a partnership (with or without a marriage certificate) or other (single or divorced). The respondent's net monthly disposable income is depicted as an ordinal variable (1 = less than €800; 2 = €800–€1600; 3 = more than €1600). Eighty percent of

[2] Measurement of *opinion orientation*: (i) I often try to find out what others who face similar problems think. (ii) I always like to know what others would do in a similar situation. (iii) If I want to learn more about something, I try to find out what others think about it. Measurement of *performance orientation*: (i) I always pay a lot of attention to how I do things compared with how others do things. (ii) I often compare how I am doing socially (e.g., social skills, popularity) with other people. (iii) I am the type of person to compare myself often with others.

all students worked at least part-time to generate income. Time spent on social media per day is also depicted as an ordinal variable (1 = none or less than one hour of social media use; 2 = 1–2 hours; 3 = 2–4 hours; 4 = more than 4 hours). Age is recorded in years. Vector $\boldsymbol{x}$ also contains controls for an individual's personality traits (the so-called Big Five), which are strong and consistent predictors of SWB (Boyce et al., 2013: 287). These traits are captured using the 7-digit Likert scale developed by Rammstedt and John (2007: 210), whereby each trait is measured with two single items; then the average of these two items is taken. The higher the score, the higher the respondents are rated in the respective personality trait.[3]

To explain how the pandemic changed the relationship between *SWB* of individual *i* and individual comparison pattern (*ICP*), we use the following model:

$$SWB_{i(PAN=0,1)} = \gamma ICP_i + \mathbf{sco}_i'\delta + \mathbf{x}_i'\kappa + \varepsilon_i, \tag{2}$$

where *SWB* is self-reported life satisfaction on an 11-point scale ranging from zero (0), completely dissatisfied, to ten (10), completely satisfied, using the question: 'All things considered, how satisfied are you with your life?'.

Based on the total number of reported reference individuals the respondents compared their income to and the direction of comparison to each reported individual (see Sect. 3.1), we construct a categorial variable *ICP* that indicates individual comparison patterns. The variable consists of a set of five mutually exclusive categories of income comparison patterns: (i) upward comparers, if at least two-thirds of the reference individuals had a higher income, (ii) downward comparers, if at least two-thirds of the reference individuals had a lower income, and (iii) horizontal comparers, if at least two-thirds of the reference individuals had the same income compared to the respondent. If no clear pattern of comparison is observed, we call them (iv) fuzzy comparers. Everybody who did not report reference individuals is labelled as (v) non-comparer.

Furthermore, we hypothesise that the association of respondents' SWB with how they compare themselves to others and their individual income comparison patterns might have changed due to their perception of the financial stress caused by the pandemic ($\boldsymbol{PAN} = 1$). Therefore, we formulate the following equations:

$$SWB_{i(PAN=1)} = \gamma ICP_i + \mathbf{sco}_\mathbf{i}'\delta + \mathbf{x}_\mathbf{i}'\kappa + \mathbf{z}_\mathbf{i}'\vartheta + \varepsilon_i \tag{3a}$$

$$SWB_{i(PAN=1)} = \gamma ICP_i + \ldots + \left(OPINION_i \times WORRY\ MONEY_i\right)\rho + \varepsilon_i \tag{3b}$$

By adding pandemic-specific control variables (vector $\boldsymbol{z}$) to Eq. (2), we get Eq. (3a). Vector $\boldsymbol{z}$ contains three control variables using Likert scales from 1 to 7 that illustrate social perceptions related to the uncertainty created by the pandemic in the respondents' personal lives. The first variable relates to the perception of respondents regarding their post-pandemic financial situation (*WORRY MONEY*).[4] The second contains the respondents'

[3] Measurement of Big Five personality traits: I see myself as someone who … [1] Openness (i) … has an active imagination, (ii) … has many artistic interests; [2] Conscientiousness (i) … does a thorough job, (ii) … tends not to be lazy; [3] Extraversion (i) … is outgoing, sociable, (ii) … is not reserved; [4] Agreeableness (i) … is generally trusting, (ii) … tends not to find fault with others; [5] Neuroticism (i) … gets nervous easily, (ii) … is not relaxed, doesn't handle stress well.

[4] On a Likert scale from 1 to 7, where 1 relates to very afraid and 7 to not afraid at all, how afraid are you that you or your loved ones will suffer from the economic recession following the COVID-19 pandemic?.

assessment of their 'future economic perspective' compared to members in their closer social network, namely family members, friends, and neighbours. The average of these three groups is converted into an index.[5] The third variable asks for a subjective assessment of whether respondents thought that their income comparison pattern had changed in terms of intensity since the start of the pandemic ('income comparison intensity').[6] We group their answers into four categories: no comparisons, decreased, unchanged, and increased comparison intensity.

We further test for interaction effects (Eq. 3b) to reflect respondents' differing perceptions regarding their post-pandemic financial situation (control variable *WORRYMONEY* in vector z). Interaction terms are created for each variable related to the income comparison pattern (***ICP***) or social comparison orientation (***sco*** vector) with the pandemic-specific control variables of social perceptions of the z-vector. The sole interaction effect we find is between the *WORRYMONEY* (vector z) and the *OPINION* variable (vector ***sco***) indicating whether the respondents pay attention to what others think or how others act in a similar situation. Neither ***ICP*** nor the control variable 'income comparison intensity' in vector z show a noticeable interaction effect with the control variable *WORRYMONEY* (indicated by the F-test and a very small effect size). Furthermore, we do not find an interaction effect with the 'performance orientation' variable of the ***sco*** vector. The results of these estimations are, therefore, not shown but are available upon request. β, γ, δ, κ, ϑ, and ρ, represent parameters to be estimated, and ε is the idiosyncratic error term.

3.3 Sample

The study is based on a repeated cross-sectional sample of 591 students.[7] Participants of this study were recruited from students of two German universities, University of the Bundeswehr Munich and Martin Luther University Halle-Wittenberg, at two points in time. The first round of interviews (n = 247) was completed just before the initial lockdown began (July 2019–February 2020). Several increasingly severe lockdowns were announced between the first and second survey rounds. The second survey round (n = 344) coincided with the start of a very strict lockdown (January–March 2021). In May 2021, social distancing rules were gradually relaxed for vaccinated people and those who had recovered from a coronavirus infection. Fourteen observations were omitted due to missing values. Although not planned initially, the pandemic allowed us to investigate whether the reference group size and composition were affected by external shocks.

Students were invited to participate in an online survey through postings on the general bulletin board and email lists reaching out to all university students. The postings and emails included the hyperlink to the online survey, which took on average 20 min to complete.

[5] On a Likert scale from 1 to 7, where 1 relates to worse and 7 to better, how do you assess your future economic perspective in the light of the COVID-19 pandemic in comparison to (a) your family? (b) your friends? (c) your neighbours?.

[6] Since the COVID-19 pandemic started, on a Likert scale from 1 to 7, where 1 relates to decreased and 7 to increased, has the intensity of comparison decreased or increased? A zero indicates that the respondent did not compare.

[7] The surveys were approved by the respective data protection officers and carried out in accordance with the European General Data Protection Regulation. Informed consent was obtained from all participants. Ethical clearance documents can be obtained from the corresponding author.

Appendix-Table 5 describes more traits of the sample. Several limitations apply to the repeated cross-sectional design and sample of our study. These are described in Sect. 3.4 below.

3.4 Study Limitations

Student samples—as ours—are widely used and have merits in explorative research designs. However, the lack of generalizability of student samples has already been discussed in the seminal paper of Henrich et al. (2010). The students in our repeated convenience sample predominantly fall within the early twenties age range. This demographic group typically demonstrates a heightened tendency for social comparisons (Buunk et al., 2020: 1; Callan et al., 2015: 196). Additionally, as students are often in a transitional phase at the outset of their careers, our findings may be skewed toward upward comparisons. These comparisons are frequently associated with the uncertainties inherent in life transitions (Lockwood et al., 2012a: 994), a phenomenon potentially exacerbated by the competitive nature of the university environment. Secondly, a student sample may reflect a middle-class bias. The context of middle-class backgrounds tends to foster social comparison due to greater social mobility (Steijn et al., 1998: 1ff; Swencionis & Fiske, 2020:258).

Furthermore, the study is based on a relatively small sample size. This may have introduced certain limitations. On the one hand, there is the potential for a self-selection bias, and on the other hand, the cohort composition changed slightly when looking at age and gender (Appendix Table 5). While an unbalanced sample can pose challenges in generalizing findings, which we are not aiming for, it is important to note that our study focused on a specific context, namely the changes in income comparison behavior of students before and during the pandemic.

Overall, the importance of social interactions with friends for SWB may vary depending on individual preferences, personality traits, and cultural norms. Therefore, the frequency of meetings with friends can be an important explanatory variable for subjective well-being. Unfortunately, we did not collect this information as we had to compromise to keep the survey duration short. The topical literature identifies health as a robust determinant of SWB (Brockmann & Delhey, 2010: 2; Dolan et al., 2008: 100; Knight & Gunatilaka, 2010: 117). However, due to an order effect, we did not include the respondents' self-reported health status in the regressions. The questions about the respondent's health status and SWB were measured using the same scale and asked together in a grid format. This resulted in an order effect (Debell et al., 2021: 4), which 'seized' our model when we added the health variable into the regression models.

As pointed out earlier, this study employed a novel survey instrument to identify individual reference groups. The robustness of the survey instrument will need to be further validated through surveys conducted in a broader range of populations. Understanding how individuals from different socio-economic and cultural backgrounds engage with reference groups could provide more valuable insights into the nuances of social comparison processes.

4 Discussion of Changes in Income Comparison Patterns and Association with SWB

In Sect. 4.1 below, we first look at whether the size and composition of the income reference group changed during the pandemic. In Sect. 4.2, we analyze the association between SWB and the income comparison pattern of our respondents. We compare two models.

The first model is based on data before the pandemic and the second on data from one year into the pandemic. Finally, Sect. 4.3 focuses on the data collected during the pandemic. Therefore, we can take advantage of pandemic-related income and social comparison variables. Interaction terms append the final model to investigate whether the pandemic altered the association between the SWB and income/social comparisons.

Since our convenience sample does not satisfy the condition of a random process of data generation that can be replicated, we refrain from interpreting *p*-values and standard errors but calculated Omega-squared (Ω^2) as a measure of effect size.[8] In general, we discuss only variables showing an Omega-squared value of at least 0.01.[9] Everything below that threshold is regarded as negligible. The associations between the covariates and SWB are relatively small, but this is typical for variables explaining SWB.[10]

We detected no problems with multicollinearity according to the variance inflation factor (VIF), see Appendix-Table 6. According to the Breusch-Pagan test, heteroscedasticity is present. We use robust standard errors, as they tend to provide more accurate measures of the true standard errors of a regression coefficient and are also suited to the problem of heteroscedasticity (Wooldridge, 2013: 276). Moreover, we checked for specification errors and found no indications of it.

4.1 Results Regarding Reference Group Size and Composition

We find no association between the COVID-19 pandemic and the average size of respondents' reference groups (*RGS*). This is contrary to our expectation that the exogenous shock associated with the COVID-19 pandemic would have a noticeable effect on reference group size. Respondents reported comparing themselves to, on average, 3.0 people before the pandemic, and 3.1 people about one year into the pandemic. In line with this result, the OLS results of Eq. (1) have very little explanatory power; all Omega-squared values are below the threshold of 0.01 due to a very small R-square (Table 1).

Although the size of the groups did not change, we found interesting shifts in their composition. This is presented in Table 2. The share of reference individuals with a lower income than the respondent fell by eight percentage points, while the share of reference persons with a higher income increased by seven percentage points about one year into the pandemic. The changes in the perceived wealth of reference individuals were less pronounced but showed the same direction as income. This implies that downward comparisons were made less often than before the pandemic. Several scholars, such as Buunk et al.,

[8] The reason for this is that we do not draw inductive inferences beyond the limits of our student sample to a specific population, as we did not apply a random process of data generation that can be hypothetically replicated (Hirschauer et al., 2020: 72).

[9] Omega-squared measures the extent to which the total variance of a dependent metric variable (e.g. SWB) is explained by an independent variable (e.g. gender). Bias-corrected estimators, such as Omega-squared, can take negative values, and of course a negative variance ratio is not meaningful. Therefore, it is a common practice to interpret this negative value as zero. We nevertheless show negative values as suggested by Okada (2017: 979).

[10] According to Wooldridge (2013: 39), low R-squared values of regression models are quite common in the social sciences. Moreover, even if we cannot observe and include all determinants of SWB in our model, this does not mean that our OLS estimation has no explanatory worth. The regression equation may be a good estimator of the *ceteris paribus* relationship between SWB and, for example, income comparisons. Compared to other works in the field, our R-squares are within the usual ranges; in most regressions on SWB only a small part of the variance is explained by observable characteristics (see e.g. Senik, 2005: 46).

Table 1 OLS regression of reference group size (*RGS*) controlled for pandemic

Explanatory variables	Pooled regression of waves 1 & 2 (n = 591)			
	Coefficients	Robust std. err	*p*-value	Effect size Ω^2
Pandemic (*PAN* (1/0)	0.051	0.153	0.738	−0.002
Social comparison orientation (sco')				
Opinion orientation (1–7)	0.012	0.063	0.842	−0.002
Performance orientation (1–7)	0.143	0.062	0.022	0.007
Socio-economic control variables (x')				
Big five personality traits				
Extraversion (1–7)	−0.022	0.051	0.673	−0.001
Neuroticism (1–7)	0.093	0.062	0.135	0.002
Openness (1–7)	0.104	0.046	0.025	0.006
Conscientiousness (1–7)	−0.029	0.065	0.655	−0.001
Agreeableness (1–7)	−0.079	0.063	0.212	0.001
Age (in 2-year brackets)	−0.020	0.053	0.704	−0.001
Male (1/0)	0.317	0.172	0.066	0.004
In a partnership (1/0)	0.314	0.155	0.043	0.006
Net income per month (Reference: income < €800)				−0.003
Medium income (€800–€1600)	−0.016	0.256	0.950	
High income (> €1600)	0.159	0.396	0.688	
Upbringing in a rural environment (1/0)	−0.184	0.148	0.215	0.001
Social media use per day (Reference: none/less than 1 hour)				0.001
				1
1–2 hours	0.190	0.318	0.550	
2–4 hours	0.385	0.334	0.249	
More than 4 hours	−0.123	0.409	0.764	
University of the Bundeswehr Munich (1/0)	0.221	0.353	0.531	−0.001
Constant	1.516	0.769	0.049	
R-squared	0.056			

(1997: 8) and Smith and Arnkelsson (2000: 47), claim that downward comparisons reduce uncertainty and stress. It could have therefore been expected that downward comparisons would increase during the pandemic. However, our results align with Lockwood et al., (2012b: 985), who claim the contrary; they stress that people prefer upward income comparisons in uncertain situations.[11]

A few more minor changes regarding the role relationship of reference individuals can be highlighted. First, the share of relatives among reference individuals increased by four

[11] It is plausible that income and therefore income comparisons could have greater significance for individuals with familial responsibilities than for university students, who are predominantly single or not yet married. But as our data shows, income comparisons are also made by students. We link this to the fact that most students in our sample worked at least part-time.

Table 2 Characteristics of respondents' reference individuals for income comparison

Variables	Percentage of all named reference individuals			Chi-2
	Total	*Survey wave 1*	*Survey wave 2*	
Income compared to respondent's	(n = 1896)	(n = 772)	(n = 1124)	0.001
Lower	37%	42%	34%	
Similar	24%	24%	24%	
Higher	39%	35%	42%	
Wealth compared to respondent's	(n = 1,852)	(n = 753)	(n = 1,099)	0.041
Lower	33%	36%	31%	
Similar	23%	21%	24%	
Higher	45%	42%	46%	
Social status compared to respondent's	(n = 1828)	(n = 747)	(n = 1081)	0.164
Lower	13%	16%	13%	
Similar	61%	59%	63%	
Higher	25%	27%	24%	
Role relationship with the respondent	(n = 1896)	(n = 772)	(n = 1124)	0.043
Partner	9%	10%	9%	
Relative	32%	30%	34%	
Friend	44%	46%	42%	
Acquaintance	4%	5%	4%	
Colleague/fellow student	5%	5%	5%	
Not known personally	3%	2%	4%	
Other	2%	3%	2%	
Gender of reference person is male	(n = 1896)	(n = 772)	(n = 1124)	0.095
Yes	55%	57%	53%	
Gender of reference person is the same as respondent's	(n = 1896	(n = 772)	(n = 1124)	0.316
Yes	65%	64%	66%	

Missing values cause different n-sizes of reference individuals with different variables

percentage points. The share of friends decreased by the same figure. Students who likely moved back in with their parents during the pandemic replaced friends with relatives in their reference groups. This may indicate that reference individuals are chosen from among those in closer proximity. The share of reference individuals not personally known to the respondent—most likely celebrities and influencers from social media—increased by two percentage points. Although the increase is slight, it seems to confirm the results from Ruggieri et al., (2021: 5). They found that Italians spent more time on social media during the pandemic, which increased their frequency of online comparisons. In line with this result, the share of respondents who reported having spent more than two hours a day on digital social networks increased by nine percentage points (see Appendix-Table 5).

In conclusion, some changes in the reporting of reference individuals before and during the pandemic could be detected. However, these changes were in no way disruptive in our student sample, indicating that income reference groups and income comparisons remain relatively stable even under extreme events like the COVID-19 pandemic.

4.2 SWB Before and One Year into the Pandemic

In line with only modest changes in the comparison behavior, SWB remained relatively stable. We recorded a slight decrease of SWB by 0.1 scale points when comparing survey waves 1 and 2. Nevertheless, the negative direction of this shift is as expected and in line with other research, for instance, by Morrison et al., (2022: 1789). In the following, we provide a more detailed analysis and discussion of the relationship between SWB and income comparison patterns in light of the COVID-19 pandemic. Analytical results refer to the OLS regressions described in equation (‘2) before ($PAN = 0$) and about one year into ($PAN = 1$) the pandemic (Table 3, Model 1 and 2, respectively).[12]

During the first survey wave, before the pandemic, we could not confirm a link between SWB and income comparison patterns. Only two of our explanatory variables showed a noticeable association with SWB with a sufficiently high effect size. First, the personality trait ‘conscientiousness’, one of the Big Five personality traits, was positively associated with SWB. People with high conscientiousness are self-controlled, organised, and determined and can postpone immediate gratification. No doubt, this personality trait can help to boost or stabilise SWB. Second, being in a partnership also affects SWB positively.

One year into the COVID-19 pandemic, the situation had changed. Most notably, the income comparison pattern (*ICP*) variable showed a noticeable association with SWB. Interestingly, the signs of *ICP* categories changed directions between the two survey waves. Before the pandemic, we observed, on average, higher levels of SWB for respondents who compared their income to others in contrast to those who did not. Thus, the pandemic seems to have caused a situation in which those who compared their incomes had, on average, lower levels of SWB compared to the omitted group of non-comparers. This result underlines that any income comparison has adverse effects on SWB. Hence, the mechanisms described in Sect. 2 (self-enhancement and self-improvement) did not seem to work in the pandemic.

The variable ‘performance orientation’ measures how respondents evaluate themselves compared to others (*sco* vector). The respondents who are more likely to evaluate their performance by comparing themselves to others had a lower level of SWB, on average, during the pandemic. This supports our finding that income comparisons during the pandemic had a negative association with SWB. We can only speculate whether this effect is due to feelings such as envy raised by the comparisons or feelings of compassion.

Personality traits generally determine how people perceive, interpret, and interact with the world. One year into the COVID-19 pandemic, two Big Five personality traits had a measurable effect on SWB. Extraversion (i.e. positively minded people) is positively associated with SWB, and neuroticism (i.e. people who do not handle stress well and worry easily) is negatively associated with SWB. This aligns with general findings from, for example, Anglim et al. (2020), who found that extraversion and neuroticism strongly correlate with well-being. It is plausible to assume that being positively minded (higher on the extraversion scale) helped people to cope with the effects of the pandemic while being high on the neuroticism scale (i.e. easily worried) had the opposite effect.

Social media use is associated with SWB. Respondents who spent more than four hours a day on social media reported, on average, lower levels of SWB than those who did not

[12] The OLS results of the pooled sample (that is before and during the pandemic with a control variable for the pandemic: *PAN*) support the results in Table 3 and can be obtained from the corresponding author upon request. For the convenience of the reader, we opted for this presentation.

Table 3 OLS regressions of SWB on income comparison pattern (ICP) prior to (Model 1) and one year into the pandemic (Model 2)

Explanatory variables	Model 1: Survey wave 1 before the pandemic (n = 247)				Model 2: Survey wave 2 during the pandemic (n = 344)			
	Coefficients	Robust std. err	*p*-value	Effect size Ω^{2*}	Coefficients	Robust std. err	*p*-value	Effect size Ω^2
Income comparison pattern (*IPC*)								
(Reference: non-comparer)				−0.002				**0.012**
Upward comparer	0.614	0.452	0.176		−0.392	0.438	0.372	
Downward comparer	0.007	0.431	0.988		−0.408	0.440	0.355	
Horizontal comparer	0.303	0.473	0.523		−0.355	0.454	0.436	
Fuzzy comparer	0.181	0.404	0.656		−0.920	0.419	0.029	
Social comparison orientation (sco')								
Opinion orientation (1–7)	0.032	0.085	0.713	−0.004	0.094	0.081	0.244	0.001
Performance orientation (1–7)	−0.164	0.110	0.139	0.007	−0.308	0.090	0.001	**0.037**
Socio-economic control variables (x')								
Big five personality traits								
Extraversion (1–7)	0.124	0.087	0.157	0.007	0.244	0.081	0.003	**0.034**
Neuroticism (1–7)	−0.119	0.109	0.278	0.002	−0.313	0.089	0.000	**0.039**
Openness (1–7)	0.067	0.072	0.349	−0.001	0.018	0.060	0.758	−0.003
Conscientiousness (1–7)	0.187	0.107	0.080	**0.011**	0.133	0.095	0.159	0.004
Agreeableness (1–7)	0.156	0.085	0.067	0.009	0.162	0.094	0.086	0.007
Age (in 2-year brackets)	0.006	0.076	0.933	−0.004	−0.134	0.072	0.062	**0.011**
Male (1/0)	−0.138	0.239	0.564	−0.003	−0.266	0.232	0.253	0.000
In a partnership (1/0)	0.634	0.235	0.008	**0.026**	0.342	0.198	0.084	0.006
Net income per month								
(Reference: income < €800)				−0.003				−0.004
Medium income (€800–€1600)	0.315	0.541	0.561		−0.069	0.313	0.825	
High income (> €1600)	0.780	0.768	0.311		0.250	0.408	0.541	
Upbringing in a rural environment (1/0)	0.046	0.223	0.836	−0.004	−0.311	0.211	0.141	0.004
Social media use per day								

Table 3 (continued)

Explanatory variables	Model 1: Survey wave 1 before the pandemic (n = 247)				Model 2: Survey wave 2 during the pandemic (n = 344)			
	Coefficients	Robust std. err	*p*-value	Effect size Ω^{2*}	Coefficients	Robust std. err	*p*-value	Effect size Ω^2
(Reference: none/less than 1 hour)				−0.003				**0.033**
1–2 hours	0.220	0.373	0.555		0.120	0.558	0.830	
2–4 hours	−0.135	0.416	0.745		−0.503	0.569	0.377	
More than 4 hours	−0.279	0.718	0.698		−1.182	0.654	0.072	
University of the Bundeswehr Munich (1/0)	0.345	0.699	0.623	−0.003	0.018	0.340	0.959	−0.003
Constant	4.386	1.190	0.000		7.770	1.128	0.000	
R-squared	0.183				0.286			

use social media at all or only very modestly (less than one hour a day). Negative emotions such as envy or depression could result from exposure to a permanent stream of idealised images from social network sites (Schmuck et al., 2019: 2, 7). Further, we presume that personality traits influence how individuals use social media and perceive narratives on these platforms. It may be that people with certain personality traits are more likely to focus on content that matches their inclinations. For example, someone with high neuroticism may be more inclined to search for negative news or ruminate, which in turn negatively affects the person's SWB, as shown in Table 3. In the case of high extraversion, individuals may use social media to connect with others and share positive experiences, which leads to higher SWB as shown in Table 3. We assume that the pandemic has intensified these effects.

Moreover, respondents of a higher age tend to report, on average, lower levels of SWB. Delayed graduation may have affected these students due to the social distancing measures implemented at universities. This result corresponds to what Aucejo et al., (2020: 1) found in the US.

4.3 SWB One Year into the Pandemic Controlled for Pandemic-Specific Worries

To illustrate the effects of the pandemic on SWB, we add a vector with pandemic-specific control variables (vector z), reflecting changing perceptions regarding income comparison and worries related to financial stress. The analysis is confined to the students interviewed after the pandemic and lockdowns had started, i.e. in survey wave 2.

We only discuss the control variables for social perceptions of uncertainty in the personal lives of students related to the uncertainty associated with the pandemic (vector z) in Model 3, Table 4, as the other variables remained consistent (except for the variable being 'in a partnership', which now has a noticeable effect size). Not surprisingly, if, during the pandemic, respondents evaluate their future economic perspective better than that of people in their social environment (i.e. relatives and friends), the association with SWB is positive. Moreover, we asked the respondents to assess whether the intensity of their income comparisons had changed during the pandemic. This variable had a noticeable effect size. It is worthwhile to look at the signs of the individual categories of 'income comparison intensity'. No matter whether the respondents increased, decreased, or did not change the intensity of their income comparison, all signs are negative, meaning they are negatively associated with SWB in contrast to those respondents who reported not comparing their income with that of others. This is in line with our income comparison pattern variable (see Sect. 4.2, Model 1 and 2). These results point in the same direction, namely that any income comparisons during the pandemic may have lowered SWB.

Second, we interpret the interaction term $OPINION \times WORRYMONEY$ (Model 4, Table 4). As explained in Sect. 3.1, this interaction term was the only one with a noticeable effect. The interacted variables are captured as binary dummy variables in the interaction term. This allows for a more straightforward interpretation of the effect.[13] Both variables alone have a negligible association with SWB (see Model 3). However, the association becomes noticeably stronger when introduced as an interaction term. This suggests that

[13] Despite this loss of information, the regression diagnostics in R-squared, AIC, and BIC did not change much.

Table 4 Relationship of SWB and COVID-19 pandemic-related uncertainty control variables during the pandemic (Model 3) and interaction term model (Model 4)

Explanatory variables	Model 3: pandemic uncertainty controls (n = 344)				Model 4: interaction term (n = 344)			
	Coeffi-cients	Robust std. err	*P*-value	Effect size Ω^{2*}	Coeffi-cients	Robust std. err	*P*-value	Effect size Ω^2
Income comparison pattern (*IPC*)								
(Reference: non-comparer)				**0.011**				0.008
Upward comparer	−0.341	0.408	0.404		−0.373	0.408	0.362	
Downward comparer	−0.358	0.408	0.382		−0.352	0.411	0.392	
Horizontal comparer	−0.356	0.421	0.399		−0.372	0.425	0.382	
Fuzzy comparer	−0.853	0.383	0.027		−0.838	0.385	0.030	
Social comparison orientation (sco')								
Opinion orientation (1–7)*	0.085	0.203	0.676	−0.003	−0.277	0.244	0.257	0.001
Performance orientation (1–7)	−0.200	0.091	0.029	**0.145**	−0.187	0.092	0.043	**0.013**
Socio-economic control variables (x')								
Extraversion (1–7)	0.274	0.082	0.001	**0.045**	0.267	0.082	0.001	**0.044**
Neuroticism (1–7)	−0.300	0.085	0.001	**0.038**	−0.320	0.087	0.000	**0.044**
Openness (1–7)	0.037	0.060	0.537	−0.002	0.021	0.061	0.724	−0.003
Conscientiousness (1–7)	0.100	0.094	0.288	0.001	0.105	0.092	0.255	0.001
Agreeableness (1–7)	0.174	0.091	0.057	0.009	0.192	0.089	0.032	**0.013**
Age (in 2-year brackets)	−0.125	0.070	0.077	**0.010**	−0.124	0.071	0.083	**0.010**
Male (1/0)	−0.219	0.232	0.345	−0.001	−0.226	0.229	0.323	0.000
In a partnership (1/0)	0.418	0.194	0.032	**0.011**	0.429	0.192	0.026	**0.012**
Net income per month								
(Reference: income < €800)				−0.005				−0.005
Medium income	−0.006	0.307	0.983		−0.074	0.303	0.807	
High income	0.251	0.405	0.536		0.156	0.397	0.695	
Upbringing in rural environment (1/0)	−0.371	0.205	0.072	0.008	−0.351	0.204	0.087	0.007
Social media use per day								
(Reference: none/less than 1 hour)				**0.029**				**0.026**

Table 4 (continued)

Explanatory variables	Model 3: pandemic uncertainty controls (n = 344)				Model 4: interaction term (n = 344)			
	Coeffi-cients	Robust std. err	*P*-value	Effect size Ω^{2*}	Coeffi-cients	Robust std. err	*P*-value	Effect size Ω^{2}
1–2 hours	0.300	0.585	0.608		0.207	0.597	0.729	
2–4 hours	−0.245	0.608	0.687		−0.305	0.619	0.622	
More than 4 hours	−0.978	0.661	0.140		−1.016	0.676	0.134	
University of the Bundeswehr Munich (1/0)	0.286	0.346	0.408	−0.002	0.239	0.346	0.491	−0.002
Control variables for the pandemic $((z'))$								
Worry money (1–7)*	0.060	0.203	0.767	−0.003	−0.467	0.305	0.127	−0.003
Future economic perspective (1–7)	0.470	0.113	0.000	**0.049**	0.495	0.113	0.000	**0.055**
Income comparison intensity								
(Reference: non-comparer)				**0.010**				**0.012**
Decreased intensity	−0.658	0.292	0.025		−0.647	0.290	0.026	
Same intensity	−0.543	0.279	0.052		−0.588	0.275	0.033	
Increased intensity	−0.580	0.353	0.101		−0.563	0.356	0.114	
Worry money (high) # opinion orientation (high)*	–	–	–	–	0.999	0.424	0.019	**0.016**
Constant	5.432	1.171	0.000		5.695	1.157	0.000	
R-squared	0.329				0.341			

* In Model 3and 4, the variables 'opinion orientation' and 'worry money' were recoded as dummies, which turns 1 for high 'opinion orientation' [for values ≥ 4.5] and 1 for 'worry money' [for values ≥ 4.5] and zero otherwise. The rationale behind is that the interaction term becomes easier to interpret and the variables in both models are easier to compare. The loss of information is marginal. Both model with the continuous variables are available upon request

the relationship between these variables ('worry money' and 'opinion orientation') and SWB changes direction depending on the level of the interaction term. For respondents who worry more about the economic recession brought on by the pandemic and, at the same time, have a low opinion orientation, the association with SWB turns negative. Not exchanging ideas and not comparing oneself to others facing similar problems in a unique and threatening situation may increase anxiety and could, therefore, decrease SWB.

5 Conclusions

This study explores whether the COVID-19 pandemic changed the size or composition of income reference groups as well as comparison patterns in relation to SWB. We expected that the average size of respondents' individual reference groups would change due to the pandemic. This was not the case. Furthermore, there was no change in the social comparison scales, i.e. opinion and performance orientation. This indicates that social comparison, in general, did not change much.

Because early measures to contain the pandemic heavily relied on social/physical distancing and lockdowns, the fact that the reference group size remained constant is, in itself, an exciting result. In addition, the composition within reference groups changed slightly. It appears plausible that the social/physical distancing measures decreased the pool from which respondents could select reference individuals. The share of relatives increased, and the share of friends decreased in the reference group after the pandemic started. This suggests that respondents may have relied more on reference persons to whom they were exposed at home or in close proximity to their homes. Another interesting result in this regard is that not only did the use of digital social networks slightly increase but the share of people in the reference group not personally known to the respondents increased somewhat, too. The underlying reason for the overall small changes in the income reference group may be that changing a comparison framework is cognitively and emotionally demanding. Thus, respondents aim to keep reference groups rather stable. This highlights the importance of routine social comparisons usually made to the same individual(s) (Corcoran & Mussweiler, 2009: 947; Mussweiler & Rüter, 2003: 467).

SWB is thought to be directly linked to the direction of the income comparison. After the pandemic started, respondents reported more upward comparisons. Comparing themselves more to others with higher incomes could likely be triggered by the perceived uncertainties of the pandemic. One year into the pandemic, SWB had not changed much. It went down by a negligible 0.1 points on the 11-point scale compared to one year before. This is in line with what other researchers found. Initial longitudinal empirical evidence suggested that at least during the early-stage pandemic, SWB remained relatively stable (Sibley et al., 2020: 625; Zacher & Rudolph, 2021: 50) while it dropped during the second wave of lockdown measures (Anglim & Horwood, 2021: 1527). Nevertheless, the association of income comparison and SWB changed. One year into the pandemic, the income comparison variables had a negative association with SWB, independent of the direction of the income comparison. Respondents not comparing their income had, on average, higher levels of SWB. We speculate that compassion for those who were worse off, on the one hand, and envy of those who were doing better, on the other hand, during the pandemic may explain this. However, the interaction term between those respondents who are low on the 'opinion orientation' social comparison scale and, at the same time, worry a lot about the economic recession shows that a lack of social comparison may also reduce SWB. Not

exchanging ideas and not comparing oneself to others facing similar problems in a unique and threatening situation may keep anxiety on an already high level and may even raise it and could, therefore, decrease SWB.

Appendix

See Tables 5 and 6.

Table 5 Descriptive results to depict sample waves of the repeated convenience student sample at two German universities

	Survey wave 1 (n = 247) Mean/percentage	Survey wave 2 (n = 344) Mean/percentage
Number of reference persons (*RGS*)	3.0	3.1
Life satisfaction (0–10)	7.1	7.0
Net income per month		
Low income (less than €800)	18.6%	29.9%
Medium income (€800–€1600)	10.9%	19.8%
High income (more than €1600)	70.5%	50.3%
Social Comparison Orientation (*sco'*)		
Opinion orientation (1–7)	4.6	4.5
Performance orientation (1–7)	3.9	4.1
Income comparison pattern (*ICP*)		
Upward comparer	21.2%	29.9%
Downward comparer	28.3%	22.1%
Horizontal comparer	9.7%	11.3%
Fuzzy comparer	32.0%	31.4%
Non-comparer	8.9%	5.2%
Social media time per day in hours		
None/less than 1 hour	12.6%	4.9%
1–2 hours	51.8%	50.6%
2–4 hours	31.6%	38.4%
More than 4 hours	4.0%	6.1%
Rural upbringing (1 = rural)	41.3%	42.7%
Age in years		
18/19	5.3%	9.6%
20/21	30.4%	26.2%
22/23	23.9%	30.8%
24/25	15.4%	15.7%
26/27	10.9%	9.0%
28/29	6.0%	4.4%
30/31	4.5%	1.7%
32/33	1.6%	1.4%
34/35	1.6%	0.6%
36/39	0.4%	0.6%
40 and older	0.0%	0.0%

Table 5 (continued)

	Survey wave 1 (n = 247) Mean/percentage	Survey wave 2 (n = 344) Mean/percentage
Gender (1 = male)	58.3%	50.8%
Marital status (1 = in a partnership)	57.1%	49.1%
Big Five personality traits, two items average		
Extraversion (1–7)	4.2	4.1
Neuroticism (1–7)	3.0	3.8
Openness (1–7)	4.6	4.6
Conscientiousness (1–7)	4.8	4.8
Agreeableness (1–7)	4.0	4.1
Worry of income situation post-pandemic (1–7)		3.44
Future economic perspective (1–7)		4.47
Income comparison intensity		
I do not compare		26.2%
Decreased income comparison intensity		29.4%
Same income comparison intensity		34.9%
Increased income comparison intensity		9.6%
University		
University of the Bundeswehr Munich	75%	55%
Martin Luther University Halle-Wittenberg	25%	45%

Table 6 Variation inflation factor

Variable	VIF Model 3	VIF Model 4
Income comparison pattern		
Upward comparer	5.31	5.32
Downward comparer	4.57	4.57
Horizontal comparer	3.03	3.03
Fuzzy comparer	5.19	5.19
Opinion orientation	1.23	1.85
Performance orientation	1.54	1.54
Extraversion	1.27	1.27
Neuroticism	1.53	1.54
Openness	1.22	1.23
Conscientiousness	1.26	1.26
Agreeableness	1.07	1.08
Age (in 2-year brackets)	1.21	1.21
Male	1.75	1.75
In a partnership	1.14	1.14
Net income per month		
Medium income	1.76	1.77
High income	8.21	8.26
Upbringing in rural environment	1.12	1.12
Social media use per day		
1–2 h per day	6.21	6.25
2–4 h per day	6.21	6.23
More than 4 h per day	2.33	2.33
University of the Bundeswehr Munich	6.39	6.40
Worry money	1.09	2.30
Future economic perspective	1.31	1.32
Income comparison intensity		
Decreased intensity	1.86	1.86
Same intensity	1.76	1.77
Increased intensity	1.34	1.34
Interaction term		
Worry money (high) # opinion orientation (low)*	–	2.89

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