

## Personality and Social Psychology

# Agreeableness, extraversion and life satisfaction: Investigating the mediating roles of social inclusion and status

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We examine inclusion and status as potential mediators in the relationships between extraversion and agreeableness, on the one hand, and life satisfaction, on the other hand. Previous research has shown that agreeableness is less strongly related to life satisfaction compared to extraversion. We argue that the relatively weak association between agreeableness and life satisfaction is due to the fact that, even though this personality trait is positively related to inclusion, it is only weakly related to status. Using structural equation modeling (SEM) and survey data from Australia, Denmark and Sweden, we test five hypotheses about the linkages between these personality traits, inclusion, status and life satisfaction. Our results show that both extraversion and agreeableness are positively associated with life satisfaction and that this association is much stronger for extraversion. Furthermore, our results show that extraversion is reliably associated with both inclusion and status, whereas agreeableness is a reliable predictor of inclusion but not of status. Turning to our mediation analysis, our main results demonstrate that the relationship between extraversion and life satisfaction is fully mediated by both inclusion and status, whereas the relationship between agreeableness and life satisfaction is partially mediated by inclusion. Our mediation analysis further shows that agreeableness has a negative direct effect on life satisfaction over and above the positive indirect effect through inclusion. Our findings highlight the role of both inclusion and status as important mediators in the relationships between extraversion and agreeableness, on the one hand, and life satisfaction, on the other hand.

**Key words:** Life satisfaction, extraversion, agreeableness, inclusion, social status, subjective well-being, personality traits.

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## INTRODUCTION

Subjective well-being (SWB) concerns global evaluations of life and experiences of positive and negative affect (Bussèri & Sadava, 2011; Diener, 1984). SWB has been shown to be an important outcome at the individual level; people frequently make decisions taking SWB into consideration (Benjamin, Heffetz, Kimball & Rees-Jones, 2012). SWB has also been deemed important at the societal level. Both the United Nations (Helliwell, Layard & Sachs, 2013) and the OECD (2011) have proposed that life satisfaction and affect should be included in national accounts of well-being. Since judgement of life satisfaction is a central component of overall well-being and quality of life (Brülde, 2007), a proliferation of research has examined its determinants. This research suggests that life satisfaction is higher among those with high material living standards and good health (Blanchflower, 2009). Another significant finding in previous research is that personality traits are strong determinants of life satisfaction (Weiss, Bates & Luciano, 2008). Personality traits concern relatively stable dispositions of behavior, thoughts and feelings and are frequently conceptualized in terms of five broad factors (McCrae & Costa, 1987). In previous studies, the Big Five personality traits neuroticism, extraversion and conscientiousness display the strongest associations with life satisfaction, whereas agreeableness and openness display weaker associations (Margolis, Schwitzgebel, Ozer & Lyubomirsky, 2019; Steel, Schmidt & Shultz, 2008).

Previous research also shows that an individual's level of life satisfaction is strongly associated with social relationships and appraisals of others. The sense of being included, accepted and

liked by others has been repeatedly shown to be connected to high levels of life satisfaction. In fact, good social relationships are often stated to be the most important predictors of life satisfaction. For instance, in a study of very happy people, Diener and Seligman (2002, p. 81) concluded that “no variable was sufficient for happiness, but good social relations were necessary.” However, positive appraisals from others and social rewards do not concern only inclusion, in the sense of being liked and accepted, but also status, in the sense of being treated with respect and admiration (Anderson, Hildreth & Howland, 2015). Until very recently, the latter form of social appraisal has been overlooked in research on the relationships between social factors and life satisfaction. Nevertheless, a few studies have found that individuals' status in the local environment (“the local ladder”) is positively connected to life satisfaction (Anderson, Kraus, Galinsky & Keltner, 2012; Fors Connolly & Johansson Sevä, 2018). Hence, the social basis of life satisfaction is most likely related to both social inclusion and status, which are correlated but still distinct aspects of how individuals are appraised by others.

When reviewing previous research on the determinants of life satisfaction, our impression is that personality traits and social relations are often considered to be separate classes of determinants (for a review, see Dolan, Peasgood & White, 2008). There is, however, reason to believe that an interplay exists between certain personality traits and social relations, influencing life satisfaction. Most notably, among the Big Five personality traits, extraversion displays a robust positive association not only with life satisfaction (Harris, English, Harms, Gross & Jackson,

2017; Steel *et al.*, 2008) but also with measures related to status and inclusion, that is, the social bases of life satisfaction (Anderson, Schmidt & Shultz, 2001; Wilson, Harris & Vazire, 2015). Based on these findings, a straightforward interpretation is that extraversion increases both inclusion and status, which in turn increases life satisfaction. In fact, studies have shown that various factors related to inclusion constitute partial mediators in the relationship between extraversion and life satisfaction (Harris *et al.*, 2017) and between extraversion and other components of subjective well-being, such as positive affect (Smillie, Wilt, Kabbani, Garratt & Revelle, 2015).

In this study, we argue that status most likely constitutes an additional and important mediator in this relationship, since extraversion has been shown to be the most influential determinant of status among the Big Five personality traits (Anderson *et al.*, 2001).

Additionally, we turn our attention to the Big Five trait agreeableness, since this trait displays a weak or non-existent relationship with life satisfaction, despite being positively associated with inclusion (Tov, Nai & Lee, 2016). In this study, we attempt to shed light on why most studies have found that agreeableness is less strongly related to life satisfaction compared to extraversion. We hypothesize that one important reason for the weak association between agreeableness and life satisfaction is that, while this trait is positively related to inclusion, it is unrelated (or only weakly related) to status (Anderson & Cowan, 2014). This suggests that agreeableness might not be as socially rewarding overall as extraversion, which is a reliable predictor of both inclusion and status. Although previous research has found that both inclusion and status are related to life satisfaction, no studies have directly disentangled the roles of status and inclusion in the relationships between personality traits and life satisfaction. In the present study, we expand knowledge about the interplay between personality traits, social factors and life satisfaction by focusing on the importance of both inclusion and status as potential mediators in the relationship between extraversion and agreeableness, on the one hand, and life satisfaction, on the other hand. To examine these relationships, we use SEM analysis and large-scale survey data from Australia, Denmark and Sweden.

### *Inclusion, status and life satisfaction*

Social rewards and needs can be divided into two fundamental dimensions. The first dimension concerns concepts such as affiliation, affection, belonging and relatedness, whereas the second dimension concerns respect, influence and prestige (Anderson *et al.*, 2015; Leary, Jongman-Sereno & Diebels, 2014). According to Leary *et al.* (2014, p. 163) “any social encounter or interpersonal relationship can be characterized in terms of the degree to which each individual is perceived as having instrumental social value (status, respect) and relational value (acceptance, liking).” In this article, we follow Mahadevan, Gregg and Sedikides (2019) and label these dimensions *inclusion* and *status*, respectively. On a conceptual level inclusion and status are similar in that both are fundamentally rewarding and involve appraisals of others. Furthermore, inclusion and status are most likely positively associated, since being respected may lead to being more liked and vice versa, which previous research also has

shown empirically (Huo, Binning & Molina, 2010). However, despite some similarities and a positive empirical association, inclusion and status should still be regarded as separate constructs (Leary *et al.*, 2014). Mahadevan *et al.* (2019, p. 445) note that “one can respect someone whom one does not like (an accomplished rival), and like someone whom one does not respect (a friendly buffoon).” Importantly, whereas status is a hierarchical and vertical concept, inclusion should be understood as a non-hierarchical and horizontal concept (Anderson *et al.*, 2015). Moreover, inclusion and status relate to different motives and value priorities; status is conceptually related to power and achievement values and inclusion to benevolence and universalism values (Roccas, Sagiv, Schwartz & Knafo, 2002).

How then do inclusion and status relate to life satisfaction? A central tenet in previous research is that life satisfaction and other forms of subjective well-being are strongly associated with the fulfillment of human needs (Steverink & Lindenberg, 2006; Tay & Diener, 2011). According to this perspective, people tend to experience high levels of life satisfaction when their physical, social and psychological needs are met. Furthermore, almost all theories of basic human needs emphasize needs that involve various forms of social inclusion. Deci and Ryan (1991) posited that relatedness, the need to be connected to, and experience caring for others, constitutes a fundamental psychological need. Likewise, Baumeister and Leary (1995) emphasized the need for belongingness, that is, the need to form and maintain strong and stable interpersonal relationships as a fundamental human desire. In support of this notion, many studies have found that both objective and subjective measures of various forms of social inclusion are positively related to life satisfaction. For instance, individuals who are married or have a partner tend to have higher life satisfaction than individuals who are single or divorced (Diener *et al.*, 2000). Having many friends and close relationships with friends has also been shown to be correlated with higher levels of life satisfaction (Lucas & Dyrenforth, 2006). Furthermore, studies investigating how subjective perceptions of need fulfillment relate to well-being tend to find positive associations between perceptions of inclusion (belonging) and life satisfaction (Mellor, Stokes, Firth, Hayashi & Cummins, 2008). Similarly, studies show that perceptions of social, family and romantic loneliness, which can be thought of as the mirror opposite of inclusion, are negatively related to life satisfaction (Neto, 2015).

When reviewing the literature, we also find that subjective measures related to inclusion, such as perceived relationship quality, tend to be more strongly associated with life satisfaction than more objective measures of inclusion, such as the frequency of meeting friends (Lucas & Dyrenforth, 2006). It is also evident that most (if not all) studies on the relationship between inclusion and life satisfaction are correlational, which makes the evidence of a causal relationship between inclusion and subjective well-being only suggestive. However, both longitudinal and experimental studies show that inclusion raises self-esteem, which in turn, is reliably associated with life satisfaction (Koch & Shepperd, 2008; Schimmack & Diener, 2003).

In addition to inclusion, Anderson *et al.* (2015) claimed that the desire for status constitutes a fundamental social motive over and above belongingness. Likewise, Lindenberg (2013) posited that status is a human need beyond affection. Yet, while many studies

have investigated the relationships between various forms of social inclusion and life satisfaction, very few studies have examined the potential influence of social status on life satisfaction. Moreover, previous research on social status has mainly focused on socioeconomic status (e.g., income) rather than actual social status. However, it can be argued that socioeconomic status is a poor measure of the extent to which individuals are respected and admired, since status is primarily dependent on people's standing in the local environment rather than their standing in society at large (Anderson *et al.*, 2015). Even though studies on the association between social status and life satisfaction are sparse, Anderson *et al.* (2012) found that social status had a much stronger association with life satisfaction than did socioeconomic status. Similarly, Fors Connolly and Johansson Sevä (2018) found that general perceptions of social status were strongly connected to judgements of life satisfaction in both the US and Sweden. Finally, Steverink, Lindenberg, Spiegel & Nieboer (2019) recently found that three types of social needs (affection, behavioral confirmation and status) all predict life satisfaction.

It is also worth noting that the findings on the relationship between status and life satisfaction are in line with the social rank theory of depression. Stevens and Price (2000) proposed that depression is an adaptive response to losing rank (status) and losing confidence in the ability to regain it. A recent systematic review (Wetherall, Robb & O'Connor, 2019) on the empirical relationships between symptoms of depression and self-perceptions of socioeconomic status confirmed a negative relationship between the two factors. Given that there is a strong negative relationship between symptoms of depression and life satisfaction (Headey, Kelley & Wearing, 1993), these studies can be seen as indirect evidence of the importance of status for life satisfaction (see also Fournier, 2009). Studies on self-esteem provide further indirect evidence highlighting the potential importance of status for judgements of life satisfaction. Whereas an influential view of self-esteem posits that self-esteem acts as a "sociometer" tracking inclusion (Leary & Baumeister, 2000), Mahadevan *et al.* (2019) and Mahadevan, Gregg, and Sedikides (2020) recently demonstrated that self-esteem also acts as a "hierometer" that tracks status. Notably, the importance of status for self-esteem was supported using cross-sectional, longitudinal and experimental research designs. Research on self-esteem thus indirectly supports the role of status as a predictor of life satisfaction over and above inclusion.

#### *How are personality traits related to inclusion and status?*

In previous research, several of the Big Five personality traits have been linked to various social behaviors and relationship outcomes (White, Hendrick & Hendrick, 2004). When reviewing the literature, extraversion and agreeableness stand out as the most important traits influencing social cooperation and appraisals of others. Regarding extraversion, it is a reliable correlate of both inclusion and status in previous studies. People who score high on extraversion tend to be enthusiastic, talkative, assertive and gregarious, whereas low scorers tend to be quiet, passive, aloof and unenthusiastic (Nettle, 2007). Studies have shown that extraverts tend to have more friends than introverts (Jensen-Campbell *et al.*, 2002), experience less social and emotional

loneliness (Saklofske & Yackulic, 1989) and be more liked in general (Wortman & Wood, 2011). However, extraversion also appears to be strongly related to social status. Studies on leadership have shown that individuals high on extraversion emerge as leaders in groups more often than individuals low on extraversion (Ensari, Riggio, Christian & Carslaw, 2011; Spark, Stansmore & O'Connor, 2018). Extraverts also attain high status in dormitories, fraternities and sororities (Anderson & Cowan, 2014) and score higher on power and achievement values (Roccas *et al.*, 2002). The latter finding suggests that status seeking may be one explanation for why extroverts often attain higher status than introverts. The tendency for extraverts to be charismatic (Bono & Judge, 2004) may also explain why extraversion is related to high levels of respect and admiration in groups. Hence, previous research strongly suggests that extraversion is a reliable predictor of both inclusion and status.

Turning to agreeableness, which is the trait most strongly connected to pro-social behavior among the Big Five personality traits (Graziano, Habashi, Sheese & Tobin, 2007), findings suggest that agreeable individuals tend to be empathic, warm, caring and trusting rather than distant, unfriendly and uncooperative (Nettle, 2007). In previous studies, agreeableness predicts high relationship satisfaction (White *et al.*, 2004), being selected as a friend (Harris & Vazire, 2016) and low levels of loneliness (Schermer & Martin, 2019). These findings suggest that agreeableness may increase inclusion. At the same time, individuals high in agreeableness do not seem more likely to emerge as leaders or to attain high status in dormitories, fraternities and sororities (Anderson & Cowan, 2014). Furthermore, DesJardins, Srivastava, Küfner and Back (2015) found that extraversion predicts status in both competitive and affiliative contexts, while agreeableness only predicts status in affiliative contexts. In contrast to extraversion, which is associated with both inclusion and status, agreeableness seems to be a much weaker predictor of status compared to inclusion. One explanation for the weak association between agreeableness and status may be that people high in this trait are more motivated to be liked rather than admired (Anderson & Cowan, 2014). Indeed, Roccas *et al.* (2002) found that agreeableness is positively related to self-transcendence values such as benevolence and universalism, but negatively related to self-enhancing values such as power and achievement.

#### *Do inclusion and status mediate the relationship between personality traits and life satisfaction?*

Like status and inclusion, personality traits are important predictors of life satisfaction. In fact, many scholars argue that personality traits may even be one of the most important determinants of life satisfaction (DeNeve, 1999). However, the relative importance of each Big Five trait for life satisfaction varies substantially. In a meta-analysis, Anglim, Horwood, Smillie, Marrero and Wood (2020) found that life satisfaction correlates most strongly with neuroticism ( $r = -0.39$ ), extraversion ( $r = 0.32$ ), and conscientiousness ( $r = 0.27$ ), while less strongly with agreeableness ( $r = 0.20$ ) and openness ( $r = 0.08$ ). When reviewing previous research, we also find that agreeableness and extraversion tend to be positively correlated and that the agreeableness–life satisfaction relationship becomes

weaker or even non-existent when controlling for extraversion (Steel *et al.*, 2008; Zhang & Tsingan, 2014).

Regarding mediators in the relationships between personality traits and life satisfaction, inclusion and status could be expected to be especially important as mediators of the relationships between extraversion and agreeableness, on the one hand, and life satisfaction, on the other hand. In previous research, several studies have investigated mediators between extraversion and life satisfaction. Most of these studies suggest that inclusion is a key mediator. For instance, studies have found that social connectedness (Lee, Dean & Jung, 2008), belonging and social engagement (Harris *et al.*, 2017), as well as different aspects of social well-being (Smillie *et al.*, 2015) mediate the relationship between extraversion and various forms of subjective well-being. A focus on social relationships as a mediator in the relationship between extraversion and subjective well-being is not surprising, given the relatively strong associations between extraversion and inclusion found in previous research. However, it should be noted that almost all studies have focused on measures related to inclusion rather than status when investigating the mediating role of social relations in the extraversion–life satisfaction relationship.

To our knowledge, no studies have investigated whether status constitutes a mediator in the relationship between extraversion and life satisfaction (or other forms of subjective well-being). However, Smillie *et al.* (2015) and Sun, Stevenson, Kabbani, Richardson & Smillie (2017) found that social contribution is an important mediator in the extraversion–positive affect relationship. While it is plausible that social contribution is an important antecedent of status (Cheng, Tracy & Henrich, 2010), we argue that the effect of social contribution may actually be explained by status rather than social contribution in itself, not least since making social contributions without getting due respect could potentially fuel dissatisfaction rather than satisfaction. A potential argument against this view is the finding of Sun *et al.* (2017) that social power did not mediate the relationship between extraversion and positive affect over and above social contribution. However, we argue that social power is not as rewarding for life satisfaction as status, since power is not necessarily dependent on positive appraisals from others. Based on this line of reasoning, it is surprising that no studies have explicitly examined the role of status in the extraversion–life satisfaction relationship.

It is perhaps equally surprising that previous studies have shown that agreeableness is only weakly related to life satisfaction, given that this trait is a reliable predictor of inclusion, which in turn is often considered to be one of the most important predictors of life satisfaction. However, taking status into consideration, the weak relationship between agreeableness and life satisfaction may not be that surprising, given that agreeableness mostly has been connected to higher levels of inclusion rather than status. Hence, agreeableness may primarily fulfill only one of the two social rewards (inclusion and status) and should, therefore, be of less importance for life satisfaction compared to extraversion. Based on the above, we formulate five hypotheses regarding the mediating roles of inclusion and status in the relationship between extraversion and life satisfaction as well as the relationship between agreeableness and life satisfaction.

## Hypotheses

**Hypothesis 1.** Extraversion is more strongly associated with life satisfaction than is agreeableness.

**Hypothesis 2.** Both inclusion and status are independently associated with life satisfaction.

**Hypothesis 3.** Extraversion is associated with both inclusion and status, while agreeableness is only related to inclusion.

**Hypothesis 4.** Social status has a unique mediating role in the relationship between extraversion and life satisfaction over and above inclusion.

**Hypothesis 5.** Inclusion but not status mediates the relationship between agreeableness and life satisfaction.

## METHOD

### Sample and procedure

The data used in this study were collected within a research project comparing subjective well-being between and within countries (data available on request from the authors). Participants were recruited from Qualtrics (<http://www.qualtrics.com>) web-survey panels in five different countries: Australia, Denmark, the United Kingdom, the United States and Sweden. The data collection stopped when Qualtrics recorded 1,260 completed survey responses in each country. Three different attention checks were used in the survey to filter out respondents who did not fill out the questionnaire carefully. Even though we are not interested in potential country differences in this study, we based our analysis on data from several countries to obtain a large sample and ensure the generalizability of our findings. However, since we did not obtain measurement equivalence for the measurements used in this study in all five countries, we excluded the samples from the UK and the USA from the present study and used only the samples from Australia, Denmark and Sweden. The questionnaire was provided in English for the Australian sample, in Danish for the Danish sample and in Swedish for the Swedish sample. Previous studies comparing survey samples provided by commercial platforms such as Qualtrics with population data show that such samples tend to be fairly representative (Boas, Christenson & Glick, 2018; Heen, Lieberman & Miethe, 2014). The total sample size for this study was 3,780 respondents. Sociodemographic information of the three samples is reported in Table 1. As can be seen, the sociodemographic characteristics of the samples were largely similar across the countries and largely representative of each population regarding age and sex (see ). The participants completed an online questionnaire consisting of 109 items. In the following, we only analyse items related to personality traits, inclusion, status and life satisfaction.

In the analysis, we used covariance-based structural equation modeling (SEM) with maximum-likelihood estimation ( $M + 7.12$ ) to test our hypotheses regarding the mediating effects of inclusion and status on the relationship between extraversion and agreeableness, on the one hand, and life satisfaction, on the other hand. As mentioned above, before testing the structural model we tested a measurement model including all measures of extraversion, agreeableness, status, inclusion and life satisfaction. Since our data were collected in three different countries, we used multigroup confirmatory factor analysis (MG-CFA) to test the stability of the factor structure and assess measurement invariance across countries.

### Measures

Life satisfaction was assessed using three items from the Satisfaction With Life Scale (Diener *et al.*, 1985; Pavot & Diener, 2008). Respondents indicated their agreement to the following statements: “In most ways my life is close to my ideal,” “The conditions of my life are excellent” and “I am satisfied with my life.” Agreement with these statements was rated on a scale from 1 (“Strongly disagree”) to 5 (“Strongly agree”). In addition to these items, we also included a single-item question adopted from the European Social Survey: “All things considered, how satisfied are you with your life as a whole nowadays?” Respondents used a response scale

Table 1. Descriptive statistics for sociodemographic variables in Australia, Denmark and Sweden

		Australia		Denmark		Sweden	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Age, years	18–24	150	11.9	169	13.4	115	9.1
	25–34	216	17.1	174	13.8	231	18.3
	35–44	210	16.7	243	19.3	228	18.1
	45–54	240	19	227	18	239	19
	55–64	276	21.9	233	18.5	216	17.1
	65 or older	168	13.3	214	17	231	18.3
Gender	Male	581	46.1	585	46.4	589	46.7
	Female	679	53.9	675	53.6	671	53.3
Household income (net USD)	\$0 to \$24,999	240	19	187	14.8	261	20.7
	\$25,000 to \$49,999	315	25	285	22.6	390	31.0
	\$50,000 to \$74,999	288	22.9	331	26.3	326	25.9
	\$75,000 to \$99,999	179	14.2	214	17	184	14.6
	\$100,000 or more	238	18.9	243	19.3	99	7.9
	Cohabiting	773	61.3	774	61.4	753	59.8
Relationship status	Has partner/not cohabiting	79	6.3	105	8.3	96	7.6
	Single (no partner)	408	32.4	381	30.2	411	32.6

ranging from 0 to 6 with endpoints labeled “Extremely dissatisfied” and “Extremely satisfied.”

The Big Five personality traits agreeableness and extraversion were measured using the mini-IPIP scale (Donnellan, Oswald, Baird & Lucas, 2006). Participants were asked to indicate their degree of agreement or disagreement with four different statements for each trait (e.g., “I am the life of the party”). Response alternatives ranged from 1 (“Very Inaccurate”) to 7 (“Very Accurate”).

We assessed social status by adapting three items taken from a study by Anderson *et al.* (2012). Respondents indicated to what extent they agreed or disagreed with the following statements: “I have a high level of respect in others’ eyes,” “I have high social standing” and “Others look up to me.” Agreement with these statements was recorded on a scale from 1 (“Strongly disagree”) to 5 (“Strongly agree”).

Although the survey did not contain a general measure of inclusion, it contained several items measuring respondents’ perception of inclusion in the domain of family as well as in the domain of friends. To construct two measures of inclusion based on each domain, we used four items from the Social and Emotional Loneliness Scale for Adults (Ditommaso, Brannen & Best, 2004, SELSA-S): “I am able to depend on my friends for help,” “I do not have any friends who understand me, but I wish I did,” “There is no one in my family I can depend on for support and encouragement, but I wish there was” and “I feel close to my family.” In the survey, respondents were also asked to rate how satisfied they were with seven different domains in life. We used ratings for “Family and close relationships” and “Friends” on a scale from 0 to 6 with the endpoints labelled “Extremely dissatisfied” and “Extremely Satisfied.”

Descriptive statistics and wording for all items are displayed in Table 2 (see for correlations between all items). In the subsequent analysis, all items were used to estimate latent factors corresponding to each construct of interest. Before testing our hypotheses, we first assessed reliability and validity of our latent measurements.

## RESULTS

### Testing a measurement model

As an initial measurement validation, we estimated a measurement model using confirmatory factor analysis with four items as

indicators of extraversion and agreeableness, respectively, three items as indicators of status, three items as indicators of inclusion (family), three items measuring inclusion (friends) and four items as indicators of life satisfaction. To evaluate the model, we used the standard model fit statistics: comparative fit index (CFI), the root mean squared error of approximation (RMSEA) and standardized root mean residual (SRMR). Overall model fit statistics are acceptable: CFI (0.911), RMSEA (0.071), and SRMR (0.050) all indicate an acceptable model fit. The Chi square for the model fit is significant but expected, given the large sample size ( $N = 3,780$ ). In Table 2, factor loadings (weights) are reported for each item, while correlations between the latent factors are displayed in Table 3.

As a next step in evaluating our measures we assess construct, discriminant and convergent validity following guidelines by Hair, Black, Babin and Anderson (2009). Table 4 reports composite reliability (CR), average variance extracted (AVE), maximum shared squared variance (MSV) and average shared squared variance (ASV). Construct reliability is satisfactory, since all latent factors reach the threshold of  $>0.70$ . Furthermore, since CR is larger than AVE for all factors, the threshold for convergent validity is reached. Discriminant validity is furthermore satisfactory, since AVE is larger than both MSV and ASV. During the development of the study we also assessed the possibility of including neuroticism as a covariate in our analysis. However, we did not obtain discriminant validity between our latent measures of neuroticism and life satisfaction and, therefore, excluded neuroticism.

Regarding the bivariate correlations between extraversion, agreeableness and life satisfaction (see Table 4), we find that the extraversion–life satisfaction correlation ( $r = 0.38$ ) is much stronger than the agreeableness–life satisfaction correlation ( $r = 0.15$ ), which mirrors previous studies (Anglim *et al.*, 2020; Steel *et al.*, 2008). We further find that extraversion and agreeableness are positively correlated ( $r = 0.30$ ), which also confirms results from previous studies (Zhang & Tsingan, 2014). As expected, we also find that status and both measures of inclusion are positively correlated.

### Testing for measurement invariance

Since our data consist of samples from three different countries (and languages), we assessed measurement invariance across countries by means of multigroup confirmatory factor analysis (MGCF; Jöreskog, 1971). In the MGCF framework it is common to assess three hierarchical levels of measurement equivalence: configural, metric and scalar (Jöreskog, 1971). For our purposes, only configural and metric invariance are required, since we want to study relationships between factors in a pooled sample rather than comparisons of group (country) means. Configural equivalence requires that the items in the model display the same configuration of factor loadings in each group. Metric invariance is stricter, since it requires that the factor loadings between items and constructs are equal across groups, meaning that respondents attribute the same meaning to the latent constructs in all groups. As a rule of thumb, if CFI decreases less than 0.01 when comparing the configural and metric model in large samples ( $n > 300$ ), metric invariance is supported (Chen, 2007).

As can be seen in Table 5, both the configural and metric models display acceptable model fit. Furthermore, CFI decreases only marginally when comparing the configural and metric model

Table 2. Descriptive statistics. Means (*M*), standard deviations (*SD*), skewness, kurtosis and indicator weights (factor loadings)

Latent factors	Indicators	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	Weight
Extraversion	1. I am the life of the party	3.04	1.51	0.28	−0.75	0.73
	2. Don't talk a lot (reversed)	4.19	1.71	0.07	−0.94	0.65
	3. Keep in the background (reversed)	3.89	1.58	0.08	−0.69	0.66
	4. Talk to a lot of different people at parties	3.87	1.73	−0.01	−0.98	0.74
Agreeableness	5. Sympathize with others' feelings.	5.21	1.27	−0.69	0.43	0.83
	6. I am not interested in other people's problems (reversed)	5.08	1.53	−0.69	−0.19	0.71
	7. Feel others' emotions	4.89	1.39	−0.54	−0.03	0.61
	8. Am not really interested in others (reversed)	5.29	1.44	−0.80	0.07	0.64
Status	9. I have a high level of respect in others' eyes	3.45	0.82	−0.56	0.59	0.66
	10. I have high social standing	2.69	0.99	−0.07	−0.48	0.71
	11. Others look up to me	3.08	0.85	−0.40	0.30	0.69
Inclusion (family)	12. I feel close to my family	3.83	1.02	−0.88	0.43	0.76
	13 There is no one in my family I can depend on for support and encouragement	1.94	1.11	1.09	0.35	−0.65
	14. How satisfied are you with your family life or close relationships?	5.42	1.40	−0.99	0.63	0.83
Inclusion (friends)	15. I am able to depend on my friends for help	3.61	1.02	−0.75	0.21	0.78
	16. I do not have any friends who understand me, but I wish I did	2.26	1.10	0.63	−0.36	−0.75
	17. How satisfied are you with your friends?	5.12	1.40	−0.80	0.30	0.83
Life satisfaction	18. All things considered, how satisfied are you with your life as a whole nowadays?	4.90	1.35	−0.73	0.20	0.85
	19. In most ways my life is close to my ideal	3.07	1.04	−0.37	−0.63	0.83
	20. The conditions of my life are excellent	3.34	1.00	−0.54	−0.20	0.80
	21. I am satisfied with my life	3.52	1.00	−0.72	0.03	0.90

Table 3. Validity and reliability of the measures used in the study

Construct	CR	AVE	MSV	ASV
Extraversion	0.79	0.48	0.35	0.20
Agreeableness	0.75	0.43	0.12	0.09
Status	0.75	0.51	0.35	0.26
Inclusion (family)	0.71	0.56	0.49	0.28
Inclusion (friends)	0.75	0.62	0.49	0.31
Life satisfaction	0.91	0.71	0.47	0.28

Note: CR = Composite reliability; AVE = average variance extracted; MSV = maximum shared squared variance; ASV = average shared squared variance.

Table 4. Product moment correlations between the latent factors used in the study

	1	2	3	4	5
1. Agreeableness					
2. Extraversion	0.32				
3. Status	0.30	0.59			
4. Inclusion (family)	0.34	0.45	0.45		
5. Inclusion (friends)	0.35	0.43	0.57	0.70	
6. Life satisfaction	0.15	0.38	0.59	0.68	0.64

(0.915 vs. 0.910), which supports metric invariance. Based on this analysis we conclude that it is reasonable to pool data from all three country samples, since respondents attribute the same meaning to the latent constructs of extraversion, agreeableness, status, inclusion (family), inclusion (friends) and life satisfaction in Australia, Denmark and Sweden.

### Testing the structural model

We now proceed by testing our hypotheses concerning the proposed structural relationships among the latent factors using

SEM. In the following, readers should note that we use the term “effect” only in a technical sense (in accordance with SEM terminology), since we are analysing cross-sectional data. When fitting the structural model, we used our latent measures of inclusion and status as mediators of the relationships between extraversion and life satisfaction as well as between agreeableness and life satisfaction, respectively. More specifically, the indirect effect of extraversion on life satisfaction corresponds to a one-path mediation through inclusion by family (extraversion → inclusion (family) → life satisfaction), a one-path mediation through inclusion by friends (extraversion → inclusion (friends) → life satisfaction) and a one path-mediation through social status. When it comes to agreeableness, the indirect effects of agreeableness on life satisfaction correspond to a one-path mediation through inclusion by family (agreeableness → inclusion (family) → life satisfaction) and a one-path mediation effect through inclusion by friends (agreeableness → inclusion (friends) → life satisfaction). Since there may be other potential mediators of the relationships between extraversion and agreeableness, on the one hand, and life satisfaction, on the other hand, we also included direct effects from agreeableness and extraversion to life satisfaction. Furthermore, in line with previous research (Mahadevan *et al.*, 2019; Tov *et al.*, 2016) and our correlation matrix in Table 1, we included a correlation between inclusion and status as well as a correlation between agreeableness and extraversion.

In Fig. 1, standardized coefficients for indirect and direct effects are displayed. Total effects and more extensive information on the indirect and direct effects are reported in Table 6. All model fit indices are in the acceptable range (RMSEA = 0.071, CI:0.069–0.073; CFI = 0.911; SRMR = 0.050), suggesting that the hypothesized model fit the data well. In line with Hypothesis 1, the total effect of extraversion on life satisfaction (0.37) is much stronger than the total effect of agreeableness on life

Table 5. Goodness-of-fit statistics for tests of measurement invariance

	Configural	Metric	Scalar
CFI	0.915	0.910	0.880
RMSEA	0.069	0.069	0.078
SRMR	0.051	0.057	0.067
Chi square	3,671 (DF: 522)	3,905(DF: 552)	5,055(DF: 582)

Note: CFI = Comparative fit index; RMSEA = root mean squared error of approximation; SRMR = standardized root mean residual.

satisfaction (0.04). In fact, the total effect of agreeableness on life satisfaction is small and does not reach statistical significance. We consider this result a replication of previous studies, which have shown that extraversion is a much stronger predictor of life satisfaction than agreeableness, particularly when (as in our model) the shared variance between extraversion and agreeableness is parsed out. Confirming Hypothesis 2, the results also show that both inclusion and status affect life satisfaction independently. Inclusion by family displays the strongest effect (0.45), followed by status (0.31), whereas the effect of inclusion by friends is weaker (0.20). More importantly, status still displays a moderately strong effect on life satisfaction independent of both measures of inclusion. These results support our notion that status constitutes an overlooked predictor of life satisfaction in most previous studies, which have focused primarily on inclusion as a predictor of life satisfaction.

Hypothesis 3 is partially confirmed, since extraversion displays positive effects on both measures of inclusion as well as on status, and since agreeableness displays effects on inclusion but only a marginal effect on status. We also note that the effect of extraversion on status is significantly stronger than the effect of each of the two measures of inclusion. Thus, we replicate previous results by demonstrating that extraversion is a strong predictor of status.

According to Hypothesis 4, we expect that the effect of extraversion on life satisfaction should be mediated by both inclusion and status, whereas in Hypothesis 5 we expect that the effect of agreeableness on life satisfaction should be mediated by inclusion but not status. As shown in Table 6, Hypothesis 4 is confirmed, since the indirect effect of extraversion on life satisfaction through the two measures of inclusion is significant, as is the indirect effect of extraversion on life satisfaction through status. The indirect effect of status (0.18) is stronger than the indirect effect of both inclusion by family (0.10) and inclusion by friends (0.07). These differences between the measures of status and inclusion are statistically significant according to the non-overlapping confidence intervals. This result provides support for the notion that status represents an important and previously overlooked mediator in the relationship between extraversion and judgements of life satisfaction.

Furthermore, the results also partly confirm Hypothesis 5, since the indirect effect of agreeableness on life satisfaction through the two measures of inclusion is stronger than the indirect effect through status. As shown in Table 6, the indirect effect of agreeableness on life satisfaction through status is positive but trivial in size (0.04), and statistically significant only because of the large sample size. To illustrate, the indirect effect from

agreeableness through status is only one third of the indirect effect of inclusion from family (0.12). These results thus, support the notion that inclusion (in the family domain) is a much more important mediator than status in the agreeableness–life satisfaction relationship.

Turning to the direct relationships between extraversion and agreeableness, on the one hand, and life satisfaction, on the other hand, we find that status and inclusion fully mediate the relationship between extraversion and life satisfaction, as judged by the weak and non-significant direct effect of extraversion on life satisfaction (0.02). However, when it comes to agreeableness, the mediation analysis reveals a direct negative effect of agreeableness on life satisfaction (−0.17).

To ensure that these findings are generalizable across countries, we also conducted separate SEM analyses for each country (see Appendix). Here we find that our hypotheses are confirmed in all three countries.

## DISCUSSION

The purpose of this study was to increase knowledge about the role of both social inclusion and social status in explaining the relationships between the personality traits extraversion and agreeableness, on the one hand, and life satisfaction, on the other hand. Given that both inclusion and status constitute the social basis of life satisfaction, it is surprising that no previous studies have investigated the extent to which each of these social needs can explain the relationship between personality traits and life satisfaction. More specifically, it is notable that the role of social status largely has been neglected in the literature on subjective well-being until recently, and that no studies have examined the mediating role of status in the extraversion–life satisfaction relationship as well as in the agreeableness–life satisfaction relationship.

Turning to our main result, we expected that status should mediate the relationship between extraversion and life satisfaction over and above inclusion, and that inclusion but not status should mediate the relationship between agreeableness and life satisfaction. The results confirm our hypotheses in showing that the relationship between extraversion and life satisfaction is mediated by both status and inclusion, whereas the relationship between agreeableness and life satisfaction is primarily mediated by inclusion. In addition, we found a direct negative effect of agreeableness on life satisfaction over and above the indirect positive effect through inclusion. We thus contribute to previous research by showing that both status and inclusion are independently and positively related to life satisfaction, thereby confirming that the social basis of life satisfaction is constituted by both types of social rewards. We also replicated results from previous research in showing that extraversion displays a much stronger relationship to life satisfaction than agreeableness. Our study also adds to previous research by demonstrating that extraversion is reliably related to both inclusion and status, whereas agreeableness is only a reliable predictor of inclusion but not of status. Although previous studies have demonstrated similar relationships, our study contributes using a larger and more representative sample than most other studies (cf. Anderson *et al.*, 2001; Mahadevan *et al.*, 2019).

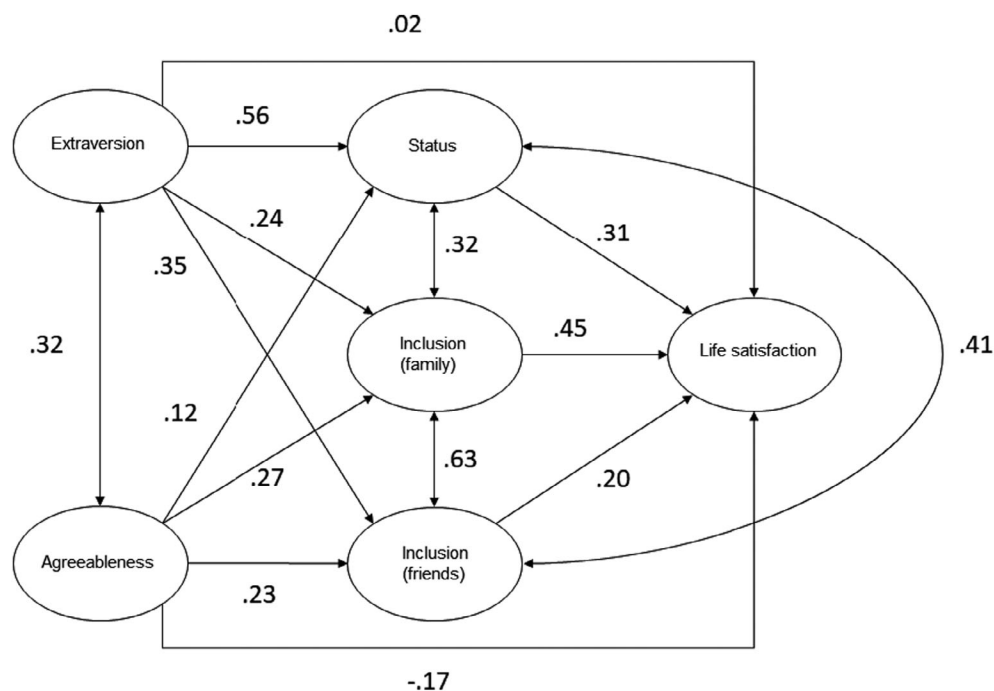


Fig. 1. Structural model of the relationships between agreeableness, extraversion and life satisfaction with status and inclusion as mediators.

Table 6. Indirect effects of extraversion and agreeableness on life satisfaction

	$\beta$	SE	<i>P</i>	CI 95%	
<i>Indirect effects</i>					
Extraversion → Life satisfaction via status	0.18	0.01	<0.001	0.15	0.20
Extraversion → Life satisfaction via inclusion (family)	0.11	0.01	<0.001	0.09	0.13
Extraversion → Life satisfaction via inclusion (friends)	0.07	0.01	<0.001	0.06	0.09
Agreeableness → Life satisfaction via status	0.04	0.01	<0.001	0.03	0.05
Agreeableness → Life satisfaction via inclusion (family)	0.12	0.01	<0.001	0.10	0.14
Agreeableness → Life satisfaction via inclusion (friends)	0.05	0.01	<0.001	0.03	0.06
<i>Direct effects</i>					
Extraversion → Life satisfaction	0.02	0.02	0.450	-0.02	0.05
Agreeableness → Life satisfaction	-0.17	0.02	<0.001	-0.20	-0.15
<i>Total effects</i>					
Extraversion → Life satisfaction	0.37	0.02	<0.001	0.18	0.23
Agreeableness → Life satisfaction	0.04	0.02	0.085	0.00	0.07

If high levels of life satisfaction depend on being both included and admired, traits that increase both of these needs will have a larger impact compared to traits that only fulfill one of these needs. Previous studies on the relationship between extraversion

and life satisfaction have largely focused on measures related to inclusion as an important mediator. However, based on our findings, inclusion is only a partial mediator in this relationship, as status also plays an important role. The role of status is compatible with Smillie *et al.* (2015) and Sun *et al.* (2017), who found that social contribution is an important mediator in the extraversion-positive affect relationship. Since social contribution most likely is an important antecedent of status, we consider our results to be an extension of these studies on the role of extraversion, social contribution and positive affect. Nevertheless, we suggest that future studies should further assess the relative importance of social contribution and social status as mediators in the relationship between extraversion and life satisfaction.

Regarding inclusion, our findings showed that inclusion in the family domain was more strongly related to life satisfaction than inclusion in the domain of friends. This result mirrors previous studies, which have found that satisfaction with family is a stronger correlate of life satisfaction than satisfaction with friends (Tiefenbach & Kohlbacher, 2015). We also found that both agreeableness and extraversion were positively related to inclusion in the domain of family to a similar degree, but that extraversion was slightly more strongly related to inclusion when it comes to friends. This suggests that extraversion is at least as important as agreeableness in nurturing positive social relationships beyond its effect on social status.

When it comes to the negative direct association between agreeableness and life satisfaction observed in our mediation model, that is, when holding levels of inclusion constant, a more agreeable person tends to have lower levels of life satisfaction compared to a less agreeable person. Future studies should devote attention to explaining this negative association. We consider one possible explanation to be that individuals with high levels of agreeableness risk being exploited in social interactions (Hilbig,



Glöckner & Zettler, 2014), which may negatively affect life satisfaction through reducing personal goal attainment.

We acknowledge the following potential limitations in our study. Since our analysis is cross-sectional, we cannot claim that the observed effects are causal, only that the results do not reject causal effects. However, since personality traits are highly stable over time (especially rank order stability) and partly inherited (McCrae, 2011; Specht, Egloff & Schmukle, 2011), it is reasonable to assume that personality traits mainly affect status and inclusion rather than the reverse. However, since some studies show that life events can affect personality traits (Scollon & Diener, 2006), reciprocal effects between status/inclusion and personality traits can certainly not be entirely ruled out. An important avenue for future research is, therefore, to investigate this issue using longitudinal data and/or experimental research designs.

Another potential limitation is that all our measures were based on self-reports. As a consequence, the strength of the associations between agreeableness, extraversion, inclusion, status and life satisfaction may be inflated due to common method bias (see Schimmack & Kim, 2020). However, even though the magnitude of these associations may be inflated in an absolute sense, the relative strength of these associations should still be reasonably accurate. For instance, even if the true association between extraversion and status is weaker than the one based on self-reports, the finding that extraversion is more strongly associated with status than agreeableness should still be valid.

Furthermore, even though we used large-scale survey data, in contrast to most previous studies on the relationship between personality and life satisfaction, our data were restricted to participants from Australia, Denmark and Sweden. Previous research provides some support for cross-cultural differences in terms of the associations between personality traits and life satisfaction. For instance, Kim *et al.* (2018) found that extraversion was a stronger predictor of life satisfaction in US samples compared to samples from the UK, Germany and Japan. It is conceivable that the cultural emphasis on social status attainment in American society might explain this pattern. Thus, future research should investigate whether the mediating role of status in the extraversion–life satisfaction relationship is stronger in the US compared to the countries analysed in this paper.

There could also be potential limitations associated with the measures used in our analysis, in particular regarding the measures of extraversion, agreeableness and inclusion. For example, the items used to capture inclusion were originally created for measuring loneliness and relationship satisfaction. However, since we were able to estimate an underlying latent factor using these items, we argue that this factor most likely captures the degree to which individuals are included in the domains of family and friends. When it comes to our personality measures, a limitation is that we used a relatively short scale with only four items for capturing extraversion and agreeableness, respectively. Consequently, our measures may not capture each trait in a fully balanced way. For instance, previous studies have shown that the mini-IPIP measure used to capture extraversion in this study relates more strongly to facets such as gregariousness and friendliness compared to assertiveness (Donnellan *et al.*, 2006), which could have inflated the association between

extraversion and life satisfaction somewhat. Future studies should, therefore, attempt to replicate our findings using more exhaustive measures of extraversion and agreeableness.

Finally, future research should also investigate to what extent status and inclusion mediates the relationship between extraversion, agreeableness and other forms of well-being such as psychological well-being (Ryff, 1989). It has previously been shown that personality traits are more strongly associated with it than with life satisfaction (Anglim *et al.*, 2020; Kokko, Tolvanen & Pulkkinen, 2013). However, no studies have to our knowledge investigated how psychological well-being is related to social status. Another important avenue for future research is to investigate whether self-esteem acts as an additional mediator in the relationships analysed here. Mahadevan *et al.* (2019) recently showed that self-esteem tracks both inclusion and status. One could, therefore, expect that extraversion and agreeableness should affect inclusion/status, which in turn influence self-esteem and subsequently judgements of life satisfaction.

We highlight several important contributions of our study. First, while previous research on life satisfaction as well its relationship to personality has primarily focused on social inclusion, our study has shed light on the importance of social status for life satisfaction as well the role of status in the relationship between personality traits and life satisfaction. Second, our study also increases the understanding of why extraversion is more strongly related to life satisfaction than is agreeableness, by showing that both inclusion and status mediate the relationship between extraversion and life satisfaction, while the relationship between agreeableness and life satisfaction is primarily mediated by inclusion. Furthermore, we contribute by demonstrating that agreeableness is negatively associated with life satisfaction when taking the mediating role of inclusion into account. Our findings thereby suggest that pro-social motives and behaviors, which characterize high levels of agreeableness, may have only a weak effect on life satisfaction, since they do not necessarily lead to higher status. Moreover, high levels of agreeableness that do not lead to social inclusion may even be detrimental for life satisfaction. Third, while our study emphasizes the importance of social status for life satisfaction, it also points to a potential dilemma when thinking about how to promote life satisfaction and life satisfaction-enhancing behaviors. The pursuit of social status constitutes a zero-sum game, that is, one individual's attainment of status will, by definition, lead to another individual's loss of status. Therefore, promoting the status-enhancing effects of extraversion will not necessarily be beneficial for societal levels of life satisfaction and overall subjective well-being. Moreover, promoting agreeableness as well as the softer aspects of extraversion (warmth) should increase inclusion, which is beneficial for other people and society at large.

## CONFLICTS OF INTEREST

There are no conflicts of interest.

## DATA AVAILABILITY STATEMENT

The data used in this study are available from the corresponding author upon request.

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## SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article:

- Table A1.** Sample and population statistics for gender and age.
- Table A2.** Bivariate correlations between all items in the pooled sample.
- Table A3.** Bivariate correlations between all items in the Australian sample.
- Table A4.** Bivariate correlations between all items in the Danish sample.
- Table A5.** Bivariate correlations between all items in the Swedish sample.
- Table A6.** Direct, indirect and total effects of extraversion and agreeableness on life satisfaction in Australia, Denmark and Sweden.