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Extraversion and life satisfaction: A cross-cultural examination of student and nationally representative samples

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Abstract

Objective: Previous research on Extraversion and life satisfaction suggests that extraverted individuals are more satisfied with their lives. However, existing studies provide inflated effect sizes, as they were based on simple correlations. In five studies, the authors provide better estimates of the relationship between Extraversion and life satisfaction.

Method: The current study examined student and nationally representative samples from Canada, the United States, the United Kingdom, Germany, and Japan (Study 1, $N = 1,460$; Study 2, $N = 5,882$; Study 3, $N = 18,683$; Study 4, $N = 13,443$; Study 5, Japan $N = 952$ and U.S. $N = 891$). The relationship between Extraversion and life satisfaction was examined using structural equation modeling by regressing life satisfaction on the Big Five traits.

Results: Extraversion was a unique predictor of life satisfaction in the North American student and nationally representative samples (Study 1, $\beta = .232$; Study 2, $\beta = .225$; Study 5, $\beta = .217$), but the effect size was weaker or absent in other non–North American samples (Germany, United Kingdom, and Japan).

Conclusions: The findings attest to the moderating role of culture on Extraversion and life satisfaction and the importance of controlling for shared method variance.

KEYWORDS
culture, extraversion, life satisfaction, method variance, personality

1 | INTRODUCTION

The first review of well-being correlates summarized the evidence by describing a happy person as "young, healthy, well-educated, well-paid, *extraverted*, optimistic, and worry-free" (Wilson, 1967, p. 294). An influential article by Costa and McCrae (1980) provided further evidence that Extraversion predicts life satisfaction concurrently and longitudinally. Personality theories propose that Extraversion and Neuroticism represent enduring characteristics that lead to increases in feelings of happiness and well-being (Campbell, Converse, & Rodgers, 1976; Diener & Larsen, 1993; Eysenck, 1990; Headey & Wearing, 1989; Lu & Shih, 1997). Extraverts seem to be happier because they are more likely to experience positive emotions, and have more social skills (e.g., extraverts are more assertive and cooperative), which are one of the important sources of individuals' happiness and well-being. Seminal reviews of the literature emphasize the importance of Extraversion as a predictor of well-being (Diener, 1984; Diener, Suh, Lucas, & Smith, 1999). A series of meta-analyses consistently shows Extraversion is positively correlated with life satisfaction judgments (DeNeve & Cooper, 1998; Heller, Watson, & Ilies, 2004; Steel, Schmidt, & Shultz, 2008). The consistency of this finding has sometimes led to the belief that Extraversion has a *strong* association with life satisfaction. For example, in popular textbooks of personality psychology, Extraversion and Neuroticism are suggested to be strong personality correlates of well-being. However, the description of effect sizes with vague verbal quantifiers is problematic. According to Cohen's (1988)

guidelines, a strong correlation is a correlation of $r = .50$. Yet, correlations between Extraversion and life satisfaction rarely reach this level. In this article, we challenge this common description of the empirical evidence by examining the relationship between Extraversion and life satisfaction in several large samples drawn from diverse populations, controlling for shared method variance (i.e., variance that can be attributable to the measurement method rather than to the constructs the measures represent; Campbell & Fiske, 1959) using structural equation modeling.

We focus on correlations between Extraversion and life satisfaction for three reasons. First, well-being includes subjective evaluations of own life satisfaction and presence of positive affect and lack of negative affect (Diener, 1984). Life satisfaction has demonstrated convergent and discriminant validity with other components of well-being, suggesting that it provides valid information on well-being that is shared with other well-being components (Lucas, Diener, & Suh, 1996; Zou, Schimmack, & Gere, 2013). Second, life satisfaction is a widely used measure of well-being to assess people's subjective evaluations of their lives. Third, Extraversion is a personality trait that has been studied in relation to life satisfaction for many years (Costa & McCrae, 1980). Lastly, and importantly, there is no conceptual overlap between life satisfaction and Extraversion. Often, in past research, different well-being components have been used to examine the relationships between personality traits and well-being regardless of the conceptual overlap between the two constructs. For instance, the empirical relationship between Extraversion and positive affect is difficult to examine because there is a conceptual overlap between Extraversion and positive affect, as one facet of Extraversion represents positive affectivity. Thus, the relation between Extraversion and affective well-being will be largely determined by the facet(s) included in the study. Therefore, we use life satisfaction as an indicator of well-being in the current study. Indeed, previous research found stronger positive relationships between affective well-being and life satisfaction in individualistic countries than in collectivistic countries, hinting about the possibility of culture as a moderating influence (Schimmack, Radhakrishnan, Oishi, Dzokoto, & Ahadi, 2002; Suh, Diener, Oishi, & Triandis, 1998). That is, the association between Extraversion and life satisfaction may be stronger in individualistic countries compared to collectivistic countries.

1.1 | Prior evidence of the association between Extraversion and life satisfaction

The results of the most comprehensive meta-analyses reported correlations ranging from $r = .25$ to $.35$ for a variety of Extraversion measures (Heller et al., 2004; Steel et al., 2008). There are a few caveats that make it difficult to rely on this finding

as evidence for the importance of Extraversion. First, the meta-analyses are mostly based on North American student samples, and it is possible that Extraversion is less relevant for other populations (Schimmack, Schupp, & Wagner, 2008). Second, simple correlations may overestimate the importance of Extraversion in these studies because all studies relied on self-ratings of Extraversion to predict self-ratings of life satisfaction. It is well known that correlations in monomethod studies tend to be inflated by shared method variance (Campbell & Fiske, 1959). As a result, simple correlations may provide inflated effect size estimates. To remove the influence of shared method variance, it is necessary to measure Extraversion and life satisfaction with different methods. Ample evidence shows that Extraversion is a highly visible trait that can be judged by informants (Connelly & Ones, 2010). Unfortunately, only a few multimethod studies of Extraversion and life satisfaction have addressed this limitation. The first article to address this was an extension of Costa and McCrae's (1980) article. In the article, McCrae and Costa (1991) examined informant ratings of personality as predictors of life satisfaction. Spouses' Extraversion ratings were a weak predictor of life satisfaction judgments ($r = .07$ to $.15$). Incidentally, the correlations with hedonic balance (i.e., more positive affect than negative affect) were also weak ($r = .04, .09$), indicating that this finding is not limited to life satisfaction as a measure of well-being. The fact that informant ratings of Extraversion were positively correlated with six measures of well-being (three indicators on two occasions) suggests that the relationship between Extraversion and well-being is positive. However, none of the correlations exceeded $r = .20$, and the average correlation was $r = .10$. This finding suggests that the monomethod studies provide inflated effect size estimates for the effect size of Extraversion and that it is important to consider shared method variance.

Cross-cultural comparisons of student samples further suggest that results from North American students cannot be generalized to other populations. Schimmack and colleagues (2002) found that Extraversion was a stronger predictor of life satisfaction for U.S. students than for students in Japan, Mexico, and Ghana. The results for German students were similar to U.S. students, but the sample size was small. Vitterso (2001) found that Extraversion accounted only for 1% of the variance in life satisfaction in a Norwegian student sample. In addition, whereas Kwan, Bond, and Singelis (1997) found a stronger effect in a Hong Kong student sample ($\beta = .31$) compared to a U.S. student sample, Cheng et al. (2016) did not find aggregated Extraversion (i.e., national-level Extraversion) to be significantly related to aggregated life satisfaction in a multinational study of university students from 33 countries. Overall, the current literature provides mixed cultural findings on the association between Extraversion and life satisfaction.

1.2 | Statistical approach to control for method variances

In the current study, we provide robust estimates of effect sizes of the associations between the Big Five personality traits and life satisfaction. Although multimethod studies are ideal to control for shared method variance, it is also possible to control for shared method variance in monomethod studies. One simple approach to control for method effects on Extraversion ratings is to regress life satisfaction ratings on several personality predictors. As Extraversion is often measured as one of the Big Five traits, ratings of other personality traits are often readily available. Multimethod studies of correlations among the Big Five have demonstrated that a general halo (positive vs. negative bias) influences Big Five ratings (Anusic, Schimmack, Pinkus, & Lockwood, 2009). Halo bias is a rater-specific bias that represents the tendency to perceive a person as more positive than the person actually is (Kim, Schimmack, & Oishi, 2012). This bias produces correlations among the Big Five when Neuroticism is reversed so that high scores reflect low Neuroticism (or high Emotional Stability). Moreover, Schimmack et al. (2008) demonstrated that the halo in personality ratings also influences life satisfaction judgments. As regression coefficients only reveal the unique relationship between predictor and criterion, regression coefficients remove the influence of a halo that is shared among all Big Five ratings.

Indeed, Steel et al. (2008) regressed life satisfaction on the Big Five personality traits and found an average regression coefficient of $\beta = .17$. This coefficient is notably weaker than the simple correlation, suggesting that simple correlations are inflated by a general halo that influences ratings of personality and life satisfaction. Moreover, it is important to keep in mind that the effect size estimate is based on a meta-analysis of college students and that multimethod studies suggest that Extraversion is a weaker predictor in other populations. Thus, the effect size of Extraversion in nonstudent samples could be less than $r = .17$. Consistent with this prediction, Schimmack et al. (2008) found that the effect size of Extraversion on life satisfaction in a nationally representative sample of Germans was close to zero, $r = .05$. This finding raises doubts about the importance of Extraversion as a predictor of life satisfaction in populations other than North American student samples.

1.3 | The current research

The goal of the present study was to improve our understanding of the relationships between personality traits and life satisfaction using rigorous statistical methodology. Although we were not able to make a priori predictions about the effect size estimate, we were able to make predictions about culture as a moderator.

We define *culture* as "explicit and implicit patterns of historically derived and selected ideas and their embodiment in institutions, practices, and artifacts" (Adams & Markus, 2004, p. 341). Social ecological factors, such as residential mobility, could affect culture and the individual members of the culture (Oishi & Graham, 2010). Countries can also differ on the extent to which one values independence and self-interest. For example, according to a meta-analysis of Hofstede's cultural dimensions, the United States, Canada, the United Kingdom, and Germany score high on individualism, whereas Japan scores low on individualism (Taras, Steel, & Kirkman, 2012).

1.3.1 | Extraversion and life satisfaction

We think that differences in these socio-ecological factors between countries lead to different contributions of Extraversion to life satisfaction. Building on the person–environment fit theory (Holland, 1973) of vocational fit between environment and personality type, we argue that personality enhances well-being when the environment is rewarding, and it maximizes well-being when the individual's personality fits the situation well (Diener, 2012; Fulmer et al., 2010; Oishi, 2000).

Several theories converge on the prediction that Extraversion, and not the other personality traits, should be a stronger predictor of life satisfaction in North America than in other nations. First, one influential theory suggests that Extraversion predicts life satisfaction because Extraversion increases the amount of positive affect, leading to a more positive hedonic balance, and a positive hedonic balance enhances life satisfaction (Costa & McCrae, 1980; Schimmack et al., 2002). However, the importance of hedonic balance as a predictor of life satisfaction is moderated by culture (Schimmack et al., 2002; Suh et al., 1998). Pleasure is more important in nations that are rich, are individualistic, and place greater emphasis on post-materialistic values. The United States is a prototypical example of a nation that emphasizes hedonic experiences. Thus, Extraversion should be the strongest predictor of life satisfaction in North America. A second argument for this prediction is that Extraversion is also a valuable asset in forming new social relationships. The ability to form new social relationships is particularly important in societies with loose social ties, changing social relationships, and high mobility (Oishi, Schug, Yuki, & Axt, 2015; Yuki & Schug, 2012). Again, the United States is a prototypical example of such nations (i.e., individualistic culture with high mobility rates). Using the Midlife in the United States (MIDUS) study data, Oishi and Schimmack (2010) have already demonstrated that Extraversion is a personality trait that can buffer against the negative effects of residential mobility. The authors found that

residential mobility was a negative predictor of well-being for introverts, but not for extraverts. This theory can also explain why Extraversion might be a particularly strong predictor of life satisfaction on North American campuses. The transition to university is also associated with moving to a new city and the task of creating new social relationships. In societies with tighter social relationships, Extraversion is less important because social relationships are determined more by roles and cultural norms. Thus, introverts may find it easier to have satisfying social relationships in these cultures.

1.3.2 | Other Big Five personality traits and life satisfaction

As all our studies used the Big Five to control for shared method bias (also called common method bias) and used all items to control for acquiescence bias (i.e., a tendency to agree with all items regardless of the content), our results also provide information about the effect sizes of other personality predictors. In the current study, we were not able to make a priori predictions for these personality traits because there are no theories that make quantitative predictions. However, we were able to make some qualitative predictions. First, we predicted that Neuroticism would be the strongest predictor of life satisfaction in all nations. Given that Neuroticism is a general disposition to experience negative emotions more intensely and for longer durations, this trait may have particularly negative effects on well-being when it leads to feelings of depression and hopelessness (Headey, Kelley, & Wearing, 1993; Schimmack, Oishi, Furr, & Funder, 2004). Second, we did not expect a positive effect for Openness to Experience, simply because meta-analyses typically show the weakest correlation with this personality dimension (Heller et al., 2004; Steel et al., 2008). Next, McCrae and Costa (1991) suggested that Agreeableness and Conscientiousness are positive predictors of life satisfaction because they can be beneficial for social relationships and work, respectively. Although there appears to be positive associations between these traits and life satisfaction, prior evidence is somewhat mixed (e.g., Schimmack et al., 2004; Steel et al., 2008). Agreeableness may be beneficial for maintaining social relationships, but it may also prevent people from leaving social relationships that are not rewarding or outright abusive. Conscientiousness is a reliable predictor of job performance, but it is also positively related to achievement motivation. If Conscientiousness raises not only performance but also performance goals (i.e., higher aspiration), then the net effect on job satisfaction and life satisfaction may be relatively small. Given the uncertainty about the average effect size of these personality traits, it is premature to speculate about potential moderator effects. Again, we believe that an important contribution of our paper is to provide robust estimates of effect sizes that can stimulate theory construction.

In conclusion, the existing evidence suggests the following:

1. Extraversion is a positive predictor of life satisfaction. We are not aware of a single study that has demonstrated a negative relationship.
2. Simple correlations in monomethod studies are inflated by shared method factors such as a halo bias.
3. The estimated effect sizes of Extraversion vary in the range from .0 and .3.
4. The relationship between Extraversion and life satisfaction may be moderated by culture, but the evidence is not consistent.
5. The existing evidence is limited because most studies have been limited to North American student samples and failed to take shared method bias into account.

Our primary aim is to obtain a more precise effect size estimate for Extraversion as a predictor of life satisfaction. To this aim, we examined the influence of Extraversion on life satisfaction in five large, diverse samples. In all five data sets, we used a sophisticated measurement model to control for shared method variance (halo bias and acquiescence bias) and obtain an unbiased estimate of the relationship between Extraversion and life satisfaction. In the absence of a theory that makes quantitative predictions, we did not make a priori predictions about the magnitude of the effect size. Rather, we believe that quantitative information is needed to stimulate theory development.

1.4 | Statistical Model

To analyze our data, we constructed a measurement model of personality ratings. The personality model is based on the halo-alpha-beta model, which is a structural equation model of the correlations between the Big Five personality traits—Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness (Anusic et al., 2009). Halo bias can be modeled using Big Five personality ratings as a higher-order factor reflecting the correlations between personality traits. The model also includes two higher-order factors, alpha and beta (Digman, 1997). It is advantageous to use the Big Five for the measurement model, as the Big Five describes the five broad dimensions of personality and is the most widely used personality model. The Big Five model has been validated in previous research (Biesanz & West, 2004; Riemann & Kandler, 2010). Thus, it is possible to use the model to distinguish valid trait variance from biases in perceptions of these personality traits rather than use other characteristics to examine individual and cultural differences

in biases. This is important, as multimethod studies have shown the presence of systematic biases in self-ratings of the Big Five, suggesting that individuals show biases in self-evaluations of personality characteristics (see Anusic et al., 2009; Davies, Connelly, Ones, & Birkland, 2015).

This model assumes that each manifest personality rating is influenced by a variety of factors, namely (a) valid variance that reflects an individual's relative standing on a personality trait, (b) systematic measurement error due to an evaluative bias (halo), (c) higher-order factors consisting of two or more traits, and (d) random measurement error. The valid personality variance can be further partitioned into factors that represent different levels in a hierarchy of personality dispositions. At the lowest level are specific dispositions. At the next level in the hierarchy are the Big Five dimensions. These dimensions reflect broader dispositions that influence several specific dispositions. For example, Extraversion is typically conceptualized as a disposition to be more sociable, outgoing, energetic, dominant, and excitement seeking. An even higher level in the hierarchy explains why the Big Five are not entirely independent. For example, the beta factor in our model accounts for the fact that Extraversion is often correlated with Openness to Experience, and the alpha factor accounts for the correlations between Neuroticism, Conscientiousness, and Agreeableness (Digman, 1997).

We used Mplus Version 7 (Muthén & Muthén,) to test our model. The fit of the model was evaluated based on the following criteria: Bayesian information criterion (BIC; lower values of BIC indicate better model fit), comparative fit index > .90, root mean square error of approximation (RMSEA) < .08, and standardized root mean square residual (SRMR) < .10 (Hair, Black, Babin, Anderson, & Tatham, 2010; Kline, 2011).

We report standardized parameter estimates, sampling error, and 95% confidence intervals (CIs) throughout the article. Confidence intervals provide information about the precision of our parameter estimates. For example, if the effect size estimate is greater than .20 and the 95% confidence interval does not include a standardized effect size estimate of .20, our results suggest that the true effect size of Extraversion is greater than .20 with a 2.5% chance that the true effect size estimate is not greater than .20 (the error rate is 2.5% because confidence intervals are two-tailed, and 2.5% of the errors go in the opposite direction). Standard errors are useful to compare effect size estimates across studies. A rule of thumb is that two effect size estimates are significantly different from each other (5%, two-tailed) when the difference between the two coefficients is larger than the sum of the standard errors of the two coefficients. This approach is not as precise as a strict comparison of parameter estimates using a single structural equation model. However, the more precise test assumes measurement invariance, and it is unlikely that these assumptions are fulfilled in cross-cultural comparisons of studies with different measures. Thus, significant differences have to be interpreted with caution, and it is more important whether our results are broadly in line with our predictions about culture as a moderator.

2 | STUDY 1

2.1 | Method

2.1.1 | Sample and measures

Participants were first-year psychology students at the University of Toronto Mississauga who voluntarily completed a questionnaire booklet in a large classroom setting in 2007 and 2008 ($N = 1,460$). Cases with any missing data were eliminated. Part of the personality data were used for a previous publication (see Anusic et al., 2009), but the data have not been used to examine the relationship between Extraversion and life satisfaction. The ethnic heritage of students is very diverse, but it does not appear to influence the relationship between Extraversion and life satisfaction (Kim et al., 2012).

The personality items in the booklet included a short version (i.e., 16 items) of the Big Five Inventory (John, Donahue, & Kentle, 1991), with a slight modification in that all items started with the phrase "I tend to (be)..." (Schimmack et al., 2004). In addition, the questionnaire included four life satisfaction items ("In most ways my life is close to ideal," "I am satisfied with my life," "I am dissatisfied with my life," "I dislike my life"). The scales of these measures showed adequate reliability except for Agreeableness (α for Neuroticism [N] = .757, Extraversion [E] = .668, Openness [O] = .741, Agreeableness [A] = .549, Conscientiousness [C] = .669, Life Satisfaction = .830). Negatively worded items were included to control the influence of acquiescence bias (i.e., the tendency for raters to differ in the extent to which they agree with items independently of their content) on life satisfaction judgments.

2.2 | Results and discussion

2.2.1 | Measurement model of the Big Five

We used the 16-item version of the Big Five measure to create a measurement model for all Big Five dimensions (i.e., three items for each dimension except for Conscientiousness). Each item had a primary loading on one personality factor. The model included an acquiescence factor, with loadings for all items fixed to be equal (see Figure 1; Rorer, 1965), and a halo factor modeled as the shared variance
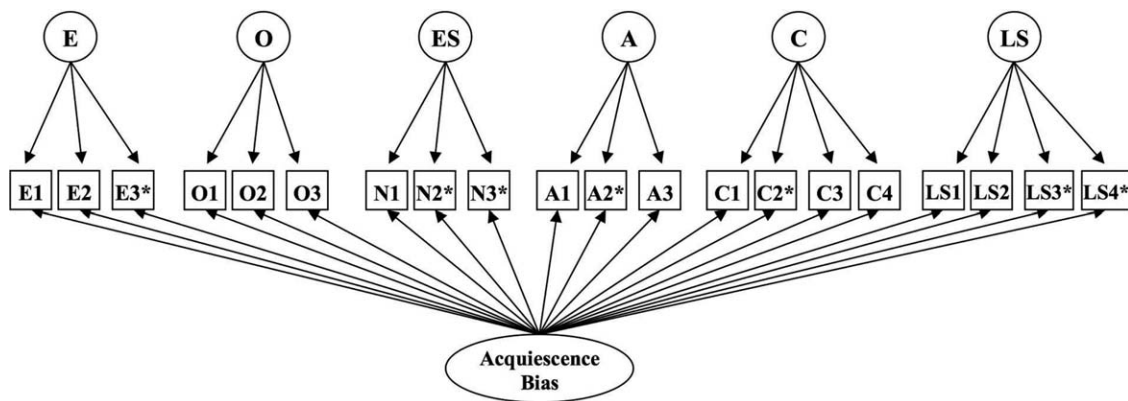
FIGURE 1 Acquiescence bias factor in Study 1. E = Extraversion; O = Openness to Experience; N = Neuroticism; ES = Emotional Stability (reversed Neuroticism); A = Agreeableness; C = Conscientiousness; LS = life satisfaction. *Items represent reverse-scored, negatively worded items

among the Big Five latent factors (see Figure 2). Initially, we included alpha and beta in the model based on theoretical models of the higher-order structure and previous findings (Anusic et al., 2009). However, the model did not identify alpha; thus, the final model did not include alpha. We think this could be a result of relatively low statistical power in the current study. Additionally, alpha and beta are relatively weak higher-order factors that caused problems of model identification in previous research (Anusic et al., 2009; Riemann & Kandler, 2010). The model fit of this measurement model was acceptable: CFI = .937, RMSEA = .049, SRMR = .053, BIC = 80066.953. With three exceptions, factor loadings of personality items on their respective personality trait factor exceeded .50. Item loadings on the acquiescence factor were small (.10 to .20). Additional analyses suggested three secondary loadings; thus, these additional relations improved model fit: CFI = .954, RMSEA = .043, SRMR = .047, BIC = 79991.653.

2.2.2 | Relations between extraversion and life satisfaction

After establishing the measurement model for Big Five personality traits, we added the life satisfaction measurement model. The measurement model of life satisfaction assumed a single latent factor for the four items. In addition, all four life satisfaction items were allowed to load on the acquiescence factor of personality items (see Anusic et al., 2009; Kim et al., 2012). The combined model allowed correlations between personality traits and life satisfaction. In this model, the loadings of the life satisfaction items on the acquiescence factor were allowed to differ from those of the personality items because the items were presented separately (Figure 1). Model fit was acceptable: CFI = .948, RMSEA = .043, SRMR = .048, BIC = 100373.398. The loadings on the acquiescence factor were significant, but small (.10 to ∼.20). This finding is consistent with the effect size of acquiescence biases in personality ratings (Anusic et al., 2009; Kim et al.,

2012). In addition, all four life satisfaction items had high standardized factor loadings (> |.70|). The correlation between Extraversion and life satisfaction was moderate to strong (Cohen, 1992) $r = .298$, 95% CI [.240, .356]. This estimate is similar to the estimate in Heller and colleagues' (2004) meta-analysis after adjusting for unreliability ($r = .34$).

Next, we examined the unique contribution of each Big Five dimension to life satisfaction by regressing life satisfaction on the Big Five dimensions (Figure 2). This change in the model had no influence on model fit. We ran two regression models: one model without the secondary loadings, and one with the secondary loadings (see Tables 1–5). We refer to the effect size of the latter model with better fit throughout the article. Although the relationship between Extraversion and life satisfaction decreased in the regression model, it remained significant, $\beta = .232$, 95% CI [.170, .294] (see Table 1), after correcting for random measurement error, but the effect size was more similar to the previous meta-analysis with predominantly North American samples (Steel et al., 2008). We therefore use this effect size as a standard of comparison in Study 2, where we fitted the same model to nationally representative data from the United States. Also,
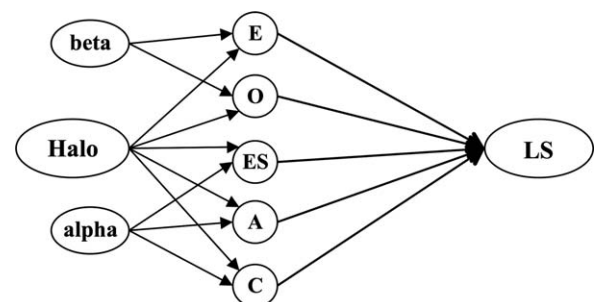

FIGURE 2 Regression model. LS = life satisfaction; E = Extraversion; O = Openness to Experience; ES = Emotional Stability (reversed Neuroticism); A = Agreeableness; C = Conscientiousness; Halo = halo of participants' ratings of their own personality. All final regression models included an acquiescence factor

TABLE 1 Correlation and regression coefficients in the North American student sample

	1	2	3	4	5
1. Neuroticism					
2. Extraversion	−.121				
3. Openness	.017	.300			
4. Agreeableness	.089	.207	.252		
5. Conscientiousness	.015	.308	.326	.353	
Life satisfaction	−.255	.298	.069	.134	.246
Regression[a]	−.213	.232	−.056	.076	.177
Regression[b]	−.221	.232	−.060	.087	.155

Note. Numbers below the diagonal represent simple correlations, and numbers in the last two rows represent regression coefficients.
[a]Numbers indicate regression coefficients without the secondary loadings.
[b]Numbers indicate regression coefficients with the secondary loadings.

consistent with previous findings using meta-analytic data and twin data (Nes, Roysamb, Tambs, Harris, & Reichborn-Kjennerud, 2006; Steel et al., 2008), Neuroticism uniquely contributed to life satisfaction.

We additionally examined the indirect effect of halo bias on life satisfaction using the model indirect function of Mplus. This effect is the total effect of the indirect path through the five personality traits. In line with previous findings (Kim et al., 2012), the indirect effect of halo bias on life satisfaction was significant, $d = .250$, 95% CI [.207, .294].

3 | STUDY 2

One limitation of Study 1 is that the North American sample was a student sample. It might be possible that Extraversion is a strong predictor for young adults' life satisfaction. Facets

TABLE 2 Correlations and regression coefficients in the MIDUS data

	1	2	3	4	5
1. Neuroticism					
2. Extraversion	−.166				
3. Openness	−.151	.615			
4. Agreeableness	.021	.719	.423		
5. Conscientiousness	−.137	.457	.424	.507	
Life satisfaction	−.408	.370	.173	.234	.378
Regression[a]	−.334	.279	−.119	.016	.255
Regression[b]	−.340	.225	−.103	−.069	.302

Note. MIDUS = National Survey of Midlife Development in the United States.
[a]Numbers indicate regression coefficients without the secondary loadings.
[b]Numbers indicate regression coefficients with the secondary loadings.

TABLE 3 Correlations and regression coefficients in the GSOEP data

	1	2	3	4	5
1. Neuroticism					
2. Extraversion	−.253				
3. Openness	−.212	.655			
4. Agreeableness	−.159	.318	.255		
5. Conscientiousness	−.214	.390	.363	.486	
Life satisfaction	−.343	.208	.200	.154	.180
Regression[a]	−.395	.074	.067	.049	.004
Regression[b]	−.452	.078	.085	.051	−.071

Note. GSOEP = German Socio-Economic Panel Study.
[a]Numbers indicate regression coefficients without the secondary loadings.
[b]Numbers indicate regression coefficients with the secondary loadings.

of Extraversion (e.g., sociability, talkativeness) might be more important for people in transition to college and new careers. To address this limitation and to extend the findings to another North American population, the relationship between Extraversion and life satisfaction was examined in a nationally representative sample from the United States.

3.1 | Method

3.1.1 | Sample and measures

The U.S. sample was based on the first wave of the National Survey of Midlife Development in the United States (MIDUS) study collected between 1995 and 1996. Cases with missing data were eliminated. The full sample consisted of individuals between the ages of 25 and 65 and above ($N = 5,882$).

The Big Five personality traits were assessed using 25 items selected from existing Big Five questionnaires (e.g., John et al., 1991). Life satisfaction was assessed with two items, including a standard life satisfaction item and an item that asked people to rate their current life. The scales of these measures had adequate reliability except for Conscientiousness (α for N = .748, E = .777, O = .774, A = .810, C = .558).

3.2 | Results and discussion

We first conducted confirmatory factor analyses with five personality factors. The model did not identify alpha; thus, alpha was removed from the model. The Big Five measurement model did not fit the data well: CFI = .795, RMSEA = .079, SRMR = .080. First, CFI values tend to be lower if a covariance matrix contains many weak covariances, which is the case in measurement models with items as

indicators because single items have a larger amount of random measurement error (Anusic et al., 2009). Second, lower CFI values can also reflect the presence of weak secondary loadings of items on Big Five factors. The model modification indices suggested 16 secondary loadings and four additional correlations at the item level within the same personality dimension (representing facets within each personality dimension). Including these relations in the model improved model fit: CFI = .908, RMSEA = .055, SRMR = .057, BIC = 284763.840. These were included in the subsequent models. The magnitude of the loadings was small to moderate; thus, they have negligible effects on the theoretically important parameter estimates.

Finally, life satisfaction was regressed on the Big Five personality traits (see Table 2): CFI = .901, RMSEA = .055, SRMR = .057. Consistent with the culture as a moderator hypothesis, Extraversion uniquely predicted higher life satisfaction in the United States, $\beta = .225$, 95% CI [.188, .262]. The effect size in the nationally representative sample is similar to the effect size in Study 1 with North American students. The confidence intervals for Extraversion in both samples overlap, which suggests a small to medium effect size for Extraversion in North America. Furthermore, the indirect effect of halo bias on life satisfaction was significant, $d = .306$, 95% CI [.280, .333].

4 | STUDY 3

4.1 | Method

4.1.1 | Sample and measures

Study 3 is based on the data from the German Socio-Economic Panel Study (GSOEP). GSOEP is a nationally representative study with annual assessments of well-being and Big Five measures. A multistage random sample technique was used to select households, and each household member (age 16 and older) was interviewed and/or given a survey (see Haisken-DeNew & Frick, 2005). The German sample, from the same population as Donnellan and Lucas (2008), was included in the final analysis. The sample, collected in 2005, was 52% women, and participants' ages ranged from 16 to 85 ($N = 18,683$). The panel study included a 15-item version of the Big Five Inventory (α for N = .603, E = .660, O = .630, A = .510, C = .623; John et al., 1991). Life satisfaction was assessed with a single item: "I am satisfied with my life."

4.2 | Results and discussion

The measurement model of the Big Five was the same as in Study 1. The first Big Five model with an acquiescence factor, a halo factor, and two higher-order factors (i.e., alpha and beta) showed acceptable fit: CFI = .901, RMSEA = .059, SRMR = .049, BIC = 946326.189. Inclusion of nine secondary loadings increased model fit: CFI = .956, RMSEA = .042, SRMR = .033, BIC = 943295.036. Next, the single life satisfaction item was added to the measurement model. The only exception was that life satisfaction was assessed with a single item. To remove random error from the single-item life satisfaction measure, a latent factor was used and error variance was fixed to 40% of the observed variance based on extensive studies of the reliability of the single-item measures of life satisfaction in general and in the GSOEP specifically (Schimmack, Krause, Wagner, & Schupp, 2010).

The final regression model showed acceptable fit: CFI = .939, RMSEA = .048, SRMR = .038, BIC = 1016658.757 (see Figure 2). Consistent with previous findings, Neuroticism was the strongest predictor of life satisfaction, $\beta = -.452$, 95% CI [–.477, –.426]. Extraversion did significantly predict life satisfaction in Germany, but the effect size, $\beta = .078$, 95% CI [.046, .110], was significantly weaker than in the previous studies in North America (see Table 3). After comparing the confidence intervals and comparing effect sizes using standard errors, we can conclude that the effect size of Extraversion differed significantly between the North American and German samples. The indirect effect of halo bias on life satisfaction was significant, $d = .269$, 95% CI [.252, .286]. Study 3 used a large, nationally representative sample to test the hypothesis that culture moderates the relation between Extraversion and life satisfaction. The results confirmed a notably weaker effect of Extraversion on life satisfaction in a nationally representative German sample.[1]

5 | STUDY 4

5.1 | Method

5.1.1 | Sample and measures

Study 4 is based on the British Household Panel Study (BHPS; Institute for Social and Economic Research, University of Essex, 2008). As with the GSOEP, the BHPS is an ongoing study with annual assessments of life satisfaction. Analyses are based on the 2005 wave that included a measure of the Big Five. Cases with missing data were eliminated. Following the approach for the GSOEP, the full sample consisted of individuals between the ages of 16 and 65 and above. Preliminary analysis revealed problems of

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[1] We conducted additional analyses dividing the nationally representative German samples into different age groups, and age did not moderate the relation between Extraversion and life satisfaction.

TABLE 4 Correlations and regression coefficients in the BHPS data

	1	2	3	4	5
1. Neuroticism					
2. Extraversion	−.169				
3. Openness	−.112	.547			
4. Agreeableness	.017	.405	.339		
5. Conscientiousness	−.108	.387	.441	.674	
Life satisfaction	−.385	.250	.147	.207	.273
Regression[a]	−.365	.122	−.065	.048	.120
Regression[b]	−.346	.126	−.065	.125	.099

Note. BHPS = British Household Panel Study.
[a]Numbers indicate regression coefficients without the secondary loadings.
[b]Numbers indicate regression coefficients with the secondary loadings.

fitting a measurement model to the data from individuals over the age of 65. To compare the results to Study 2, this group was not included in the analysis. The final sample size was $N = 13,443$.

The 15-item Big Five measure was identical to the measure used in the GSOEP, except that the language was English (α for N = .682, E = .549, O = .675, A = .533, C = .519). In the BHPS, life satisfaction is assessed with a single item using a 7-point response format (Lucas & Donnellan, 2007). Based on Lucas and Donnellan's (2007) study of retest correlations, reliability was estimated to be .60, which is consistent with the reliability in the GSOEP and other studies (Schimmack et al., 2010). This value was used to adjust parameter estimates in the model for unreliability in the measurement of life satisfaction.

5.2 | Results and discussion

The measurement model with Big Five traits, alpha and beta, showed acceptable fit for two of the three fit indices: CFI = .896, RMSEA = .064, SRMR = .059, BIC = 707817.758. This model identified alpha and beta. Inclusion of 13 secondary loadings increased model fit: CFI = .952, RMSEA = .047, SRMR = .036, BIC = 705418.147.

Furthermore, life satisfaction was regressed on the Big Five personality traits. The final regression model showed acceptable fit: CFI = .951, RMSEA = .046, SRMR = .035, BIC = 747579.776. The effect size for Extraversion, $\beta = .126$, 95% CI [.103, .149] (see Table 4), was lower than the effect size of the meta-analytic results of predominantly North American studies (Steel et al., 2008) and more similar to the effect size in the GSOEP ($\beta = .078$). The indirect effect of halo bias on life satisfaction was significant, $d = .267$, 95% CI [.251, .284].

TABLE 5 Correlations and regression coefficients in the Japanese and U.S. data

	1	2	3	4	5
1. Neuroticism		−.311	−.126	−.155	−.186
2. Extraversion	−.478		.532	.569	.353
3. Openness	−.245	.591		.357	.562
4. Agreeableness	.012	.392	.217		.337
5. Conscientiousness	−.033	.266	.684	.135	
Japan life satisfaction	−.503	.455	.329	.209	.165
U.S. life satisfaction	−.473	.350	.193	.153	.299
Japan regression[a]	−.441	.166	.013	.198	−.010
Japan regression[b]	−.437	.153	.022	.182	.023
U.S. regression[a]	−.523	.207	−.225	−.031	.202
U.S. regression[b]	−.547	.217	−.271	−.046	.203

Note. Numbers below the diagonal represent simple correlations in the Japanese data, and numbers above represent simple correlations in the U.S. data. Japan life satisfaction: Numbers represent simple correlations between Big Five personality traits and life satisfaction in the Japanese data. U.S. life satisfaction: Numbers represent simple correlations between Big Five personality traits and life satisfaction in the U.S. data.
[a]Numbers indicate regression coefficients without the secondary loadings.
[b]Numbers indicate regression coefficients with the secondary loadings.

6 | STUDY 5

6.1 | Method

6.1.1 | Samples and measures

In 2012, Nikkei Research Inc. and its U.S. affiliate conducted a national online survey in Japan and the United States using a national probabilistic sampling method based on gender and age. A total of 952 Japanese (471 females; $M_{age} = 45.17$, $SD = 13.64$) and 891 U.S. individuals (453 females; $M_{age} = 43.71$, $SD = 14.01$) completed the survey. Life satisfaction was measured with the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), and the Big Five with the short version of the International Personality Item Pool Inventory (25 items; Goldberg et al., 2006) on a 5-point Likert scale. The Japanese participants completed the survey in Japanese, which was translated by the researcher and double-checked by the fourth author.

The first three items of the Satisfaction With Life Scale were selected for life satisfaction (United States: $\alpha = .911$; Japan: $\alpha = .913$), as previous research has shown that the last two items were not sufficiently good indicators of life satisfaction in comparisons of North Americans and Asians (Oishi, 2006). As both data included the same personality and life satisfaction scale, we conducted multiple group analysis. For the Big Five measurement model, each Big Five dimension included three items. The scales of the Big Five

measure showed adequate reliability in the U.S. data, except for Conscientiousness (α for N = .786, E = .794, O = .696, A = .689, C = .676), and Japanese data (α for N = .812, E = .775, O = .661, A = .666, C = .526). The lower reliability estimates for Conscientiousness raise concern for examining the effect sizes of Conscientiousness because lower reliability leads to a bigger adjustment to the confidence interval (broader confidence interval).

6.2 | Results and discussion

We first conducted confirmatory factor analyses with five personality factors and higher-order factors. The model did not identify alpha and beta; thus, they were removed from the model. Next, we ran a model with an acquiescence factor and a halo factor that allowed life satisfaction to be freely correlated with the Big Five dimensions. All parameters including correlations between the Big Five and life satisfaction were constrained to be equal across the two groups. The model showed poor fit: CFI = .811, RMSEA = .087, SRMR = .129, BIC = 92458.759. Next, we allowed the means of measured personality variables and the correlations between the Big Five traits and life satisfaction to vary across two groups. The model fit improved: CFI = .895, RMSEA = .067, SRMR = .075, BIC = 91664.447.

Additional analysis revealed differences in the factor loadings of life satisfaction items on the acquiescence factor for the United States and Japan (.30 vs .10), as well as five secondary loadings for the Japanese sample and two for the U.S. sample. The final model showed acceptable fit: CFI = .933, RMSEA = .054, SRMR = .057, BIC = 91336.990.

Next, we examined the unique contribution of each Big Five dimension to life satisfaction using the same model by regressing life satisfaction on the Big Five personality traits. Neuroticism was the strongest predictor of life satisfaction in the United States, β = −.547, 95% CI [−.629, −.464] (see Table 5), and Japan, β = −.437, 95% CI [−.504, −.369]. The effect size for Extraversion was higher in the United States, β = .217, 95% CI [.127, .306], than Japan, β = .153, 95% CI [.071, .235]. The effect size for Extraversion in the Japanese data was similar to the U. K. sample but lower than the U.S. sample (see Table 6). The confidence interval for the Japanese sample is rather high, and it overlaps with the assumed effect size for North Americans and Germans. This may be due to the nature of the sample (i.e., online survey) and the rather high correlations between the Big Five personality traits (e.g., correlation of −.478 between Neuroticism and Extraversion in the Japanese sample). The bigger confidence interval means larger uncertainty of the effect size estimate; thus, no firm conclusion can be drawn. Therefore,

more research should be devoted to the study of personality and well-being, especially in non–North American countries.

The total effect of the indirect path of halo bias on life satisfaction was strong in both national groups, United States, d = .246, CI 95% [.176, .316], and Japan, d = .344, 95% CI [.289, .400], which is consistent with previous findings (Kim et al., 2012). These findings suggest that life satisfaction can be inflated by shared method variances.

7 | GENERAL DISCUSSION

Extraversion is often mentioned as an important characteristic of individuals with high life satisfaction and has been widely accepted as beneficial for one's life satisfaction (Costa & McCrae, 1980; Diener et al., 1999; Wilson, 1967). Yet, whether this notion holds true outside of North America is unclear. Numerous meta-analyses based on thousands of participants have demonstrated that Extraversion is a robust positive predictor of life satisfaction in North America. The most recent and authoritative meta-analysis found effect sizes of r = .17 for life satisfaction (Steel et al., 2008). Previous meta-analyses revealed significant heterogeneity in effect size estimates across studies, but the sources of this variation have not been studied systematically. Most of the previous studies either examined the simple correlations between Extraversion and life satisfaction or focused on North American student samples.

The current study was the first to use a number of rigorous empirical analyses to investigate the relations between personality and life satisfaction. First, we used a regression approach to control for the shared (method) variance among Big Five ratings by a single rater to provide robust estimates of effect sizes. We suggest that the effect size for Extraversion is ∼.20, at least for the North Americans. In three different North American student and nationally representative samples, we found a robust relation between Extraversion and life satisfaction. The confidence intervals of the effect sizes of Extraversion in the North American data did not overlap with the confidence intervals in the German data. The difference between the effect sizes for Extraversion was significantly larger than the sum of the standard error of the two coefficients in the comparison of North American and German data and slightly larger in the comparisons of North American and other non–North American samples. These analyses further provide evidence for cultural differences in the effect of Extraversion on life satisfaction. Comparisons of effect sizes suggest that extraverts may be happier in North American countries. We conclude that Extraversion has a small to moderate positive effect (∼.20) on life satisfaction primarily in North American cultures.

TABLE 6 Regression coefficients and standard errors

	North America (UTM)		North America (MIDUS)		North America (Study 5)		Japan		Britain		Germany	
	a	b	a	b	a	b	a	b	a	b	a	b
Neuroticism	−.213 (.031)	−.221 (.031)	−.334 (.017)	−.340 (.017)	−.523 (.042)	−.547 (.042)	−.441 (.034)	−.437 (.035)	−.365 (.010)	−.346 (.010)	−.395 (.012)	−.452 (.013)
Extraversion	.232 (.032)	.232 (.032)	.279 (.020)	.225 (.019)	.207 (.044)	.217 (.046)	.166 (.046)	.153 (.042)	.122 (.012)	.126 (.012)	.074 (.016)	.078 (.016)
Openness	−.056 (.034)	−.060 (.034)	−.119 (.019)	−.103 (.020)	−.225 (.060)	−.271 (.065)	.013 (.054)	.022 (.053)	−.065 (.013)	−.065 (.013)	.067 (.017)	.085 (.018)
Agreeableness	.076 (.034)	.087 (.034)	.016 (.020)	−.069 (.020)	−.031 (.051)	−.046 (.053)	.198 (.037)	.183 (.036)	.048 (.014)	.048 (.014)	.049 (.012)	.051 (.013)
Conscientiousness	.177 (.033)	.155 (.033)	.255 (.021)	.302 (.020)	.202 (.058)	.203 (.059)	.010 (.054)	.023 (.053)	.120 (.014)	.099 (.012)	.004 (.013)	−.071 (.014)

Note. UTM = University of Toronto Mississauga; MIDUS = National Survey of Midlife Development in the United States.

[a] Numbers represent regression coefficients without the secondary loadings.

[b] Numbers represent regression coefficients with the secondary loadings.

7.1 | Potential mechanisms

Our study provides new evidence regarding the potential mechanism of the cultural findings. Extraversion is a valuable resource for maintaining satisfying relationships, which can increase positive affect and ultimately life satisfaction. Extraversion may be more useful in more individualistic, extraverted, and high-mobility countries with loose social ties where it is necessary to form new relationships (Diener et al., 1999; McCrae & Costa, 1991; Oishi & Schimmack, 2010). In these countries, it is desirable to be outgoing and sociable and to have social skills to build new social networks in the environment (Asendorpf & Wilpers, 1998; Oishi & Schimmack, 2010).

We found support for culture as a possible moderating factor. Extraversion was a weaker predictor of life satisfaction in less individualistic cultures with low mobility rates. Our findings echo previous research and meta-analyses of mostly North American samples (see Steel et al., 2008). The effect sizes for Extraversion were strongest in the Canadian student sample and U.S. nationally representative samples, and weakest in the German nationally representative sample (Canadian student sample, $\beta = .232$; nationally representative sample of middle-aged U.S. adults, $\beta = .225$; nationally representative U.S. online sample, $\beta = .217$). The magnitudes of the effect size for the British and Japanese samples were in between, suggesting that Extraversion may be more beneficial for individuals living in an extraverted country. Extraversion may also work as a buffer against negative effects of residential mobility (Oishi & Schimmack, 2010). This further supports our argument of culture-fit theory (Diener, 2012; Fulmer et al., 2010; Oishi, 2000). If personality is valued in the culture, culture functions as an important amplifier of the relation between personality and well-being. It is more desirable to be extraverted in high-mobility, extraverted environments, where Extraversion is a valuable asset to build new social networks.

The United States is a prototypical individualistic country with a focus on positive emotions (Diener, Suh, Smith, & Shao, 1995); therefore, extraverts benefit more in terms of well-being from living in an extraverted country. Although Germany is considered an individualistic country, Germany and the United States differ greatly in terms of cultural values and residential mobility. Extraverts may not necessarily benefit from being extraverted in Germany, as Germany is neither an extraverted country nor a high-mobility country (Clark & Huang, 2003; Long, 1991; Oishi, 2010; Sánchez & Andrews, 2011). We also think that Extraversion may not work as an amplifier in non–North American countries, such as the United Kingdom and Japan. The mobility rates varied by the definition of mobility used in the article, but mobility rates for the United Kingdom and Japan were always lower than those for the United States and higher than for

Germany. These findings suggest that differences in culture, such as variations in individualism and mobility, contribute to the influence of Extraversion on life satisfaction.

However, a different viewpoint was presented in recent work by Cheng et al. (2016). Cheng and colleagues conducted a multinational, multilevel study of university students across 33 countries. They found Extraversion to predict higher positive affect and life satisfaction at the individual level but Extraversion not to predict positive affect and negative affect at the cultural level. At the individual level, extraverts in general were more likely to report higher well-being. Interestingly, Extraversion positively predicted both positive and negative affect (but not life satisfaction) at the cultural level, suggesting that, on average, cultural groups with higher Extraversion were more likely to report higher aggregated negative affect ($\beta = .487$, $SE = .216$) and positive affect ($\beta = .464$, $SE = .169$). There was a nonsignificant relationship between Extraversion and life satisfaction ($\beta = -.072$, $SE = .227$) at the cultural level. The authors interpreted the findings as an indication that Extraversion is more valued and well developed in collectivistic cultures, as it is, like interdependent self-construal, a socially oriented construct. We think that this is unlikely considering previous research on personality profiles (Allik & McCrae, 2004; Fulmer et al., 2010; McCrae & Terracciano, 2005) finding even higher mean Extraversion in individualistic cultures than in collectivistic cultures. Second, if Extraversion is a trait that means warmth and affection and refers to a tendency to enjoy interpersonal bonds with close acquaintances such as family members and friends, it is expected to be more highly related to social affiliation scales than positive affect scales. Previous research has shown how different facets of Extraversion were more strongly related to positive affect than to each other (Watson & Clark, 1997). We think Extraversion (sociability facet) reflects more a broader form of sociability. For example, extraverts, compared to introverts, are more likely to enjoy social interactions with various groups (e.g., with friends, colleagues, and strangers), and they will be more likely to feel positive emotions in emerging or socially engaging situations. Third, the current article uses a sophisticated statistical model that controls for evaluative biases. This is important because halo bias varies across cultures (Kim et al., 2012; Kim, Schimmack, Cheng, Webster, & Spectre, 2016). Fourth, sampling differences may also be a factor. Cheng and colleagues' (2016) study was based on university students, but we compared nationally representative samples. Lastly, Neuroticism and Extraversion are conceptually related to positive and negative affect; thus, one must be cautious in interpreting findings of aggregated personality ratings and affective ratings. However, it is important to note that the unique contribution of Extraversion to life satisfaction ($\beta = .163$, $SE = .012$ at the individual level) in Cheng and colleagues' study was consistent with our prediction and previous meta-analyses confirming a weaker effect for Extraversion. Overall, although it has been widely accepted that Extraversion is beneficial for one's life satisfaction, our study provides the first evidence that the benefits of Extraversion may be more pronounced in the context of North American culture.

7.2 | Other Big Five personality traits

In addition to Extraversion, our study provides evidence of the unique effect of other personality traits on life satisfaction. Previous meta-analysis (Steel et al., 2008) suggests the strongest effect of Neuroticism, and lower effect of Openness, Agreeableness, and Conscientiousness. Consistent with previous findings and theory, Neuroticism showed the strongest effect on life satisfaction except for Study 1. As Neuroticism refers to the general disposition to be anxious, moody, and nervous, it has negative effects on well-being. The effect size did not vary much across countries, and we propose the effect size for Neuroticism to be $\sim.4$, which is consistent with previous findings on the stability and heritability of well-being (Nes et al., 2006). As predicted, we found a weaker effect for Openness, and mixed findings were found for Agreeableness and Conscientiousness. Agreeableness may be valuable to maintain relationships; however, it may have negative consequences as individuals may stay in relationships even if they are harmful for their well-being. We found some support for culture as a moderator for Conscientiousness. The effect sizes for Conscientiousness were stronger in the North American samples. However, we do not have a hypothesis for the effect sizes for these three personality traits. Future research needs to reexamine the relations between personality and life satisfaction using nationally representative samples from different countries. The current study provides quantitative information that can be used to stimulate theory development.

8 | LIMITATIONS AND FUTURE DIRECTIONS

A number of limitations need to be considered when evaluating our findings. Most of these limitations are shared with previous studies, including meta-analyses of these studies. First, the vast majority of studies have assessed personality and well-being indicators with self-ratings, typically within the same survey. It is likely that observed correlations are biased by shared method variance (Campbell & Fiske, 1959). We addressed this limitation more thoroughly than previous studies by modeling and removing the influence of acquiescence bias. However, additional biases, such as socially desirable responding, can distort effect size estimates

in either direction. Future research should rely more heavily on multiple methods and sophisticated statistical models to assess personality and life satisfaction (Kim et al., 2012). For example, previous research found strong evidence for the halo bias, and it was strongly related to life satisfaction in the North American population. Thus, controlling for this evaluative bias would be helpful in estimating the true effect sizes in different cultures.

Another limitation was the variation in measurement models of the Big Five. Although key features of the measurement model were invariant (primary factor loadings, acquiescence factor, halo factor), other aspects of the model varied across studies (substantial Big Five correlations, secondary loadings). These problems reflect uncertainty in the field about the conceptualization and measurement of personality traits. However, effect size estimates tend to be quite robust in the face of small variations in the measurement model. Nevertheless, effect size estimates might change with developments in the measurement of personality traits.

A third limitation was the focus of one aspect of well-being. Well-being can be measured in terms of affective well-being (positive affect, negative affect) and cognitive well-being (life satisfaction), and the current study focused on the latter part. Although there is an overlap between the definition of the affective component of well-being and the personality traits, it is crucial to examine both components of well-being in a single study to provide a full picture of the relation between Extraversion and well-being considering the conceptual overlap between the two personality traits (Extraversion and Neuroticism) and affective well-being indicators, positive affect and negative affect (Schimmack et al., 2002).

Fourth, a more important limitation is the underlying causal inferences in this research without testing causality. Future research needs to use more quasi-experimental designs to test the hypothesis that Extraversion is a cause of well-being rather than the other way around. For example, happy people compared to unhappy people might share their state of mind with others more often.

Finally, and most importantly, our study did not examine the specific cultural factors that account for the weak effect of Extraversion on life satisfaction in Germany. Multinational studies with large sample sizes will be needed to address this issue. Future studies should include measures of social support, satisfaction with social relationships, and residential moves during the lifetime, and compare countries or regions or individuals with different mobility rates to test the hypothesis directly. It is important to note that large sample sizes are needed to test competing moderator hypotheses because the overall effect sizes and the difference between effect sizes are small to moderate. Discovering these moderators is an exciting avenue for future research on the contribution of personality traits to well-being.

CONFLICT OF INTERESTS

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