

Personality and Social Psychology

Be yourself, believe in yourself, and be happy: Self-efficacy as a mediator between personality factors and subjective well-being

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Research has shown close connections between personality and subjective well-being (SWB), suggesting that personality traits predispose individuals to experience different levels of SWB. Moreover, numerous studies have shown that self-efficacy is related to both personality factors and SWB. Extending previous research, we show that general self-efficacy functionally connects personality factors and two components of SWB (life satisfaction and subjective happiness). Our results demonstrate the mediating role of self-efficacy in linking personality factors and SWB. Consistent with our expectations, the influence of neuroticism, extraversion, openness, and conscientiousness on life satisfaction was mediated by self-efficacy. Furthermore, self-efficacy mediated the influence of openness and conscientiousness, but not that of neuroticism and extraversion, on subjective happiness. Results highlight the importance of cognitive beliefs in functionally linking personality traits and SWB.

Key words: Happiness subjective well-being, life satisfaction, personality, self-efficacy.

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INTRODUCTION

Subjective well-being (SWB) is an intensely studied domain of psychology, predominantly in the more recently emerged field of positive psychology, but also in other areas like general, personality, social, counseling, and organizational psychology (for review see Diener, 1984; Diener, Suh, Lucas & Smith, 1999; Kahneman, Diener & Schwarz, 2003). SWB encompasses peoples' cognitive and emotional evaluations of their lives (Diener, Oishi & Lucas, 2003). The most frequently studied aspects of SWB are life satisfaction (Diener, 2009) and subjective happiness (Lyubomirsky, 2001). According to Diener, Emmons, Larsen, and Griffin (1985) life satisfaction refers to a cognitive judgmental process by which a person assesses her quality of life. On the other hand, subjective happiness refers to a global and subjective evaluation of whether one is a happy or an unhappy person (Lyubomirsky & Lepper, 1999). Thus, from these definitions, life satisfaction can be regarded as a more cognitive component of SWB, whereas subjective happiness represents a rather affective component of SWB.

Recent research has started examining how personality and motivational processes influence these two different components of SWB (e.g., Lyubomirsky, 2001; Myers & Diener, 1995; cf. Proctor, Linley & Maltby, 2008; Steel, Schmidt & Shultz, 2008). Personality dispositions, such as extraversion and neuroticism, have been shown to substantially influence levels of subjective well-being (cf. Diener *et al.*, 2003). One of the most comprehensive models of personality, the Five Factor Model of Personality (the "Big Five" of neuroticism, extraversion, agreeableness, openness, and conscientiousness; McCrae & Costa, 1997), has been linked to SWB in several studies, finding substantial relations between personality factors and SWB (e.g., Costa &

McCrae, 1980; Hart, 1999; Heller, Watson & Ilies, 2004; McCrae & Costa, 1991). In particular, it was neuroticism and extraversion that have repeatedly been shown to correlate moderately to strongly with different aspects of SWB (e.g., Costa & McCrae, 1980; Lucas & Fujita, 2000; for reviews on the connections between personality dispositions and SWB see DeNeve & Cooper, 1998; Diener *et al.*, 2003; Steel *et al.*, 2008).

However, personality is not the only psychological determinant of individual levels of SWB. A number of cognitions and beliefs have also been shown to affect SWB (Lent, Singley, Sheu *et al.*, 2005). Among them, self-efficacy is a construct of major relevance. Self-efficacy has been intensely investigated by proponents of social cognitive theory (e.g., Bandura, 1997, 2001; Lent, 2004; Lent *et al.*, 2005). Bandura (1994) defines self-efficacy as "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives" (p. 71). People who are confident to achieve what they want (i.e., are high in self-efficacy) have been found to experience higher SWB than people who are not (i.e., are low in self-efficacy; Caprara & Steca, 2005; Carver & Scheier, 1999; Lent *et al.*, 2005; Luszczynska, Scholz & Schwarzer, 2005; McGregor & Little, 1998; Ryan & Deci, 2001).

Self-efficacy has also been shown to substantially relate to some of the Big Five personality factors. In particular, self-efficacy relates negatively to neuroticism, relates positively to extraversion, openness, and conscientiousness, and has no systematic relation with agreeableness (Judge & Ilies, 2002). Therefore, we are not further considering agreeableness in our study.

Although self-efficacy has been shown to relate to both personality factors and SWB, evidence regarding the functional relationship between the three constructs is sparse. Recently, a

first step has been undertaken in connecting personality factors, self-efficacy, and SWB. Based on the predominant theoretical positions in the field and on the corresponding empirical findings, Lent *et al.* (2005) analyzed the contributions of personality, affective, and social cognitive variables to well-being. The results of their analysis led to a model which integrates these variables. Their model suggests that self-efficacy functions as a mediator between personality and life satisfaction. Moreover, in a sample of younger adults, Fogle, Huebner, and Laughlin (2002) have shown that the influence of extraversion and neuroticism on life satisfaction is mediated by social self-efficacy.

In summary, the available literature clearly suggests that personality factors, self-efficacy, and SWB are consistently associated with each other. Moreover, personality factors and self-efficacy are predominantly considered predictors rather than consequences of SWB (Diener *et al.*, 2003; Lent, 2004). Finally, the results of Lent *et al.* (2005) and Fogle *et al.* (2002) indicate that self-efficacy may mediate the relationship between personality and SWB.

However, out of the Big Five personality factors, only neuroticism and extraversion were considered in the studies by Lent *et al.* (2005) and Fogle *et al.* (2002). Furthermore, Fogle *et al.* (2002) only investigates social self-efficacy, whereas Lent *et al.* (2005) consider both social and academic self-efficacy. Yet, both capture only domain-specific facets of general self-efficacy.

Extending this sparse literature, our study aims at further exploring the mediating role of self-efficacy in the relation between personality, self-efficacy, and SWB in the following three ways.

First, we follow Fogle *et al.*'s (2002) suggestion to investigate the generalizability of the mediating relationships through which personality influences SWB. Thus, in accordance with previous results by Lent *et al.* (2005) and Fogle *et al.* (2002), we propose the following hypothesis:

H1: The influence of neuroticism and of extraversion on life satisfaction will be mediated by self-efficacy.

Second, following Fogle *et al.*'s (2002) argumentation that although personality is biologically rooted and relatively stable, its expression can be modified through (social) cognitive processes (see also Mischel & Shoda, 1995), we propose that the mediating relationship found for neuroticism and extraversion can be generalized to openness and conscientiousness:

H2: The influence of openness and conscientiousness on life satisfaction will be mediated by self-efficacy.

Third, life satisfaction, which has been studied as a dependent variable in the studies by Lent *et al.* (2005) and Fogle *et al.* (2002), is only one (the cognitive) component of SWB. However, Lyubomirsky and Lepper (1999; see also Lyubomirsky, 2001) point out that the subjectively perceived happiness (the affective component of SWB) is an equally important aspect of SWB.

Thus, we contribute to the existing literature by investigating for the first time whether the previously documented mediating

role of self-efficacy on the relationship between personality and the cognitive component of SWB (i.e., life satisfaction) can also be generalized to the affective component of SWB (i.e., subjective happiness). We therefore propose:

H3: The influence of neuroticism, extraversion, openness, and conscientiousness on subjective happiness will be mediated by self-efficacy.

METHOD

Participants

Out of the 180 subjects participating in the study, 48.9% were female. Age ranged from 19 to 60 years ($M = 26.32$, $SD = 8.26$). The sample predominantly consisted of university students (72.8%; age: $M = 23.15$, $SD = 3.79$) who were recruited on the university campus. The remaining participants were either employees (21.7%; age: $M = 33.77$, $SD = 9.62$) or self-employed (5.5%; age: $M = 38.70$, $SD = 14.17$). Participants were not paid but received course credit for participation if required.

Measures

Personality factors were assessed with the German translation of Costa and McCrae's (1992) NEO-Five-Factor-Inventory (NEO-FFI) by Borke-nau and Ostendorf (1993). Self-efficacy was measured using the General Self-Efficacy Scale (GSES) by Schwarzer and Jerusalem (1999). This scale consists of 10 items (e.g., "I can usually handle whatever comes my way") to be rated on four-point Likert-type scales. Two facets of overall SWB were assessed: a cognitive global rating of life satisfaction was obtained from the scores of the Satisfaction with Life Scale (SWLS; Diener *et al.*, 1985). The SWLS consists of five items (e.g., "In most ways, my life is close to my ideal") to be rated on seven-point Likert-type scales. An affective global rating of subjective happiness was obtained by the Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999). This scale consists of four items (e.g., "Compared to most of my peers, I consider myself: more happy/less happy") to be rated on five-point Likert-type scales.

Procedure

Participants either received a questionnaire directly after regular classes or were recruited on campus. Additional participants completed the questionnaire at their homes. It took about 20 minutes for the participants to fill out the questionnaire.

RESULTS

Reliability

Overall, internal consistencies (Cronbach's α) were satisfactory to good for all Big Five dimensions ($0.72 < \alpha < 0.86$), self-efficacy ($\alpha = 0.85$), life satisfaction ($\alpha = 0.79$), and subjective happiness ($\alpha = 0.72$).

Descriptive statistics

Means and standard deviations, internal consistencies, and inter-correlations are presented in Table 1.

Table 1. Descriptive statistics and correlations between measures

Scale	M	SD	N	E	O	A	C	SE	SWB (LS)	SWB (SH)
N	2.67	0.66	(0.86)	-0.36**	-0.10	-0.08	-0.38**	-0.54**	-0.43**	-0.46**
E	3.46	0.49		(0.75)	0.20**	0.14	0.31**	0.43**	0.35**	0.40**
O	3.56	0.57			(0.76)	0.21**	0.07	0.18*	0.19*	0.13
A	3.50	0.48				(0.72)	0.07	-0.10	0.08	0.24**
C	3.66	0.56					(0.81)	0.37**	0.34**	0.26**
SE	2.99	0.42						(0.85)	0.34**	0.27**
SWB (LS)	5.31	0.93							(0.79)	0.47**
SWB (SH)	3.62	0.67								(0.72)

Notes: N = Neuroticism, E = Extraversion, O = Openness, A = Agreeableness, C = Conscientiousness, SE = Self-efficacy, LS = Life Satisfaction, SH = Subjective Happiness, SWB = Subjective Well-Being (pooled correlation using Fisher's z -transformation). Internal consistencies (Cronbach's α) are shown in brackets.

** $p < .01$.

* $p < .05$.

Among the personality factors, neuroticism and extraversion correlated most strongly with both life satisfaction and subjective happiness (neuroticism: $r = -0.43$, $p < 0.01$ and $r = -0.46$, $p < 0.01$; extraversion: $r = 0.35$, $p < 0.01$ and $r = 0.40$, $p < 0.01$, respectively), whereas agreeableness obtained the weakest association with life satisfaction ($r = 0.08$, n.s.), and openness obtained the weakest association with subjective happiness ($r = 0.13$, n.s.). All other intercorrelations were medium in size and significant at the 0.05-level (two-tailed) at least. Overall, our results closely resemble the findings of a recent meta-analysis on the connections between the Big Five personality factors and SWB (Steel *et al.*, 2008), with the exception of the correlation between openness and life satisfaction which was considerably stronger in our study.

Regarding self-efficacy, there was a negative correlation with neuroticism, a positive correlation with extraversion, openness, and conscientiousness, and a non-significant correlation with agreeableness. This pattern is completely in line with existing meta-analyses (Judge & Ilies, 2002). Self-efficacy was also significantly correlated with both life satisfaction ($r = 0.34$, $p < 0.01$) and subjective happiness ($r = 0.27$, $p < 0.01$), which also closely resembles results of previous research (e.g., Caprara & Steca, 2005).

Mediation analysis

Our proposed mediation model consists of the following components (see Fig. 1): the Big Five personality factors constituted the independent variable, self-efficacy was introduced as mediator variable, and SWB was the dependent variable (which was sepa-

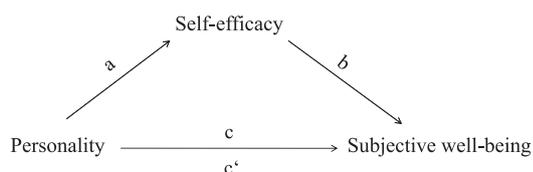


Fig. 1. Graphical representation of the general mediation model.

Note: a = effect of personality factors (neuroticism, extraversion, openness, conscientiousness) on self-efficacy; b = effect of self-efficacy on subjective well-being (SWB); c = total effect of personality on SWB when self-efficacy is not included as a mediator; c' = direct effect of personality factors on SWB when self-efficacy is included as mediator.

ately measured for the two aspects of life satisfaction and subjective happiness, respectively).

In order to examine whether self-efficacy mediates the relationship between personality and SWB, we performed regression-based mediation analyses estimating all paths depicted in Fig. 1 by employing the procedures provided by Preacher and Hayes (2008). Their approach tests for mediation by assessing the statistical significance of the indirect effect, that is, the path from the independent variable via the mediator variable to the dependent variable. A bootstrapping procedure which involves repeatedly drawing samples from the original sample in order to create an empirical approximation of the sampling distribution of the indirect effect, is used to obtain confidence intervals for the indirect effect. If the bootstrapped confidence interval of the point estimate of the indirect effect through the proposed mediator does not include zero, the mediating effect is to be regarded significant (Preacher & Hayes, 2008). This procedure has the advantage of being independent from distributional assumptions regarding the parameter estimates for the indirect path. In line with Preacher and Hayes (2004), our analyses were based on 3,000 bootstrap samples.

Consistent with H1, significant mediation of self-efficacy was observed for the influence of neuroticism (point estimate of indirect effect: -0.12 ; bias corrected and accelerated 95% confidence interval [BCa 95% CI]: -0.25 to -0.01) and extraversion (point estimate of indirect effect: 0.21 ; BCa 95% CI: 0.09 to 0.36) on life satisfaction (see Table 2). Hence, it can be concluded that H1 is supported by the data.

Consistent with H2, we obtained a significant mediating effect of self-efficacy for the influence of openness (point estimate of indirect effect: 0.09 ; BCa 95% CI: 0.02 to 0.18) and conscientiousness (point estimate of indirect effect: 0.16 ; BCa 95% CI: 0.06 to 0.29) on life satisfaction (see Table 2). Thus, H2 is supported by the data.

Based on H3 we expected a significant mediating effect of self-efficacy for the influence of all Big Five personality factors on subjective happiness. Consistent with H3 we found that self-efficacy significantly mediated the relationship between openness (point estimate of indirect effect: 0.06 ; BCa 95% CI: 0.01 to 0.13) as well as conscientiousness (point estimate of indirect effect: 0.11 ; BCa 95% CI: 0.04 to 0.21) and subjective happiness. However, contrary to our hypotheses we found no significant mediating effect of self-efficacy for neuroticism (point estimate of

Table 2. Mediation of the effects of personality factors on life satisfaction through self-efficacy

Scales	Path a		Path b		Path c		Path c'		Indirect effect		
	β	p	β	p	β	p	β	p	Point estimate	BCa 95% CI	
									β	Lower	Upper
Neuroticism	-0.35	0.00	0.35	0.04	-0.58	0.00	-0.46	0.00	-0.12	-0.25	-0.01
Extraversion	0.37	0.00	0.56	0.00	0.56	0.00	0.35	0.00	0.21	0.09	0.36
Openness	0.12	0.02	0.71	0.00	0.28	0.02	0.20	0.07	0.09	0.02	0.18
Conscientiousness	0.27	0.00	0.59	0.00	0.53	0.00	0.37	0.00	0.16	0.06	0.29

Note: BCa = bias corrected and accelerated; CI = confidence interval; 3,000 bootstrap samples.

Table 3. Mediation of the effects of personality factors on subjective happiness through self-efficacy

Scales	Path a		Path b		Path c		Path c'		Indirect effect		
	β	p	β	p	β	p	β	p	Point estimate	BCa 95% CI	
									β	Lower	Upper
Neuroticism	-0.35	0.00	0.08	0.48	-0.48	0.00	-0.45	0.00	-0.03	-0.12	0.05
Extraversion	0.37	0.00	0.22	0.05	0.56	0.00	0.47	0.00	0.08	-0.01	0.18
Openness	0.12	0.02	0.45	0.00	0.18	0.03	0.12	0.12	0.06	0.01	0.13
Conscientiousness	0.27	0.00	0.40	0.00	0.28	0.00	0.18	0.05	0.11	0.04	0.21

Note: BCa = bias corrected and accelerated; CI = confidence interval; 3,000 bootstrap samples.

indirect effect: -0.03; BCa 95% CI: -0.12 to 0.05) and extraversion (point estimate of indirect effect: 0.08; BCa 95% CI: -0.01 to 0.18; see Table 3). Hence, H3 was only partially supported.¹

CONCLUSION

The main objective of our study has been to investigate self-efficacy as a mediator of the influence of personality factors on life satisfaction and subjective happiness as two different components of SWB.

On a correlational level, our results resemble the findings of existing research on the associations between personality factors and cognitive and affective indicators of SWB (DeNeve & Cooper, 1998; Steel *et al.*, 2008), between self-efficacy and Big Five personality factors (Judge & Ilies, 2002), and between self-efficacy and both cognitive and affective components of SWB (Caprara & Steca, 2005; Fogle *et al.*, 2002; Lent *et al.*, 2005). Thus, our results generally confirm previous research revealing associations between Big Five personality factors, cognitive and affective indicators of SWB, and self-efficacy.

Specifically, we investigated three hypotheses. Hypothesis 1 stated that the influence of neuroticism and of extraversion on life satisfaction will be mediated by self-efficacy, which was supported by the data. This is in line with the results of Fogle *et al.* (2002). Hypothesis 2 stated that the influence of openness and conscientiousness on life satisfaction will be mediated by self-efficacy, which was confirmed as well. Our results thus show that self-efficacy can be regarded as a mediator of the influence of personality on life satisfaction. Hence, besides personality factors directly influencing life satisfaction, there is also a route via self-efficacy: people low in neuroticism and high in extraversion, openness, and conscientiousness are not only predisposed to be

more satisfied with their life than other people, but are also higher in self-efficacy which in turn increases life satisfaction. Our results thus show that the role of self-efficacy as a mediator between personality and life satisfaction also emerges on a more general level than indicated by previous results by Lent *et al.* (2005) and Fogle *et al.* (2002).

Finally, in Hypothesis 3, we proposed that self-efficacy has a mediating function in the relationship between personality factors and subjective happiness (in the same way as it mediates the relationship between personality factors and life satisfaction). This hypothesis was only partially confirmed: self-efficacy indeed emerged as a significant mediator of the relationships between the factors openness and conscientiousness on the one hand, and subjective happiness on the other hand, but we found no evidence for a mediating effect of self-efficacy for the influences of neuroticism and extraversion on subjective happiness.

How can this difference between the findings regarding life satisfaction and subjective happiness be explained? We propose the following interpretation: Diener *et al.*'s (1985) scale assesses life satisfaction as a "cognitive, judgmental process [...] dependent upon a comparison of one's circumstances with what is thought to be an appropriate standard" (p. 71). The Subjective Happiness Scale, on the other hand, provides "a global, subjective assessment of whether one is a happy or an unhappy person" (Lyubomirsky & Lepper, 1999, p. 139), with happiness as one aspect of (positive) affect. Moreover, the personality factors of neuroticism and extraversion are more closely linked to affective experiences than the remaining personality factors (Steel *et al.*, 2008). Thus, these two personality factors might affect subjective happiness by substantially determining affective experiences. In such a strong relationship, intervening cognitive mechanisms such as self-efficacy beliefs may play no major role. On the contrary, personality

factors with a less affective notion (such as openness and conscientiousness) might exert their influence on subjective happiness through cognitive beliefs.

The findings of this study have implications for researchers and practitioners alike. Although an extensive body of research has been conducted concerning the antecedents of well-being, few studies have focused on the processes linking personality factors and SWB. Our study contributes to a better theoretical understanding of these processes. Furthermore, practitioners (e.g., educators, therapists etc.) aiming at improving well-being of their clients might be well advised to place more focus on self-efficacy, which according to our data seems to have a profound influence on the interplay between personality and SWB.

The results of our study are limited in the following ways. First, we used a relatively small convenience sample which may not necessarily ensure generalizability of our results. Second, our cross-sectional data does not allow definite conclusions about the direction of causality implied in our mediation model. However, personality factors are relatively stable dispositions (see e.g., Roberts & DelVecchio, 2000), whereas self-efficacy and SWB are considered more malleable (see Gist & Mitchell, 1992; Sheldon & Lyubomirsky, 2006). Thus, personality factors are more likely to precede and influence self-efficacy and SWB than vice versa. Third, according to Maxwell and Cole (2007), mediation analysis using cross-sectional data can lead to biased estimates as compared to longitudinal models in which temporal variability of all variables is assumed. Although this limitation may not fully apply to our design since personality factors are relatively stable over time (see above), further research is needed to reproduce our results with longitudinal data. Finally, our results should be cross-validated using samples more heterogeneous in age and education level.

NOTE

¹ One might argue that the shared variance between personality factors could be a potential problem when conducting separate mediation analyses for each of the personality factors. The confirmed mediation effects might be based on the same amount of variance shared by the predictors. We addressed this issue by simultaneously introducing all personality factors in a single structural equation model (SEM) of the proposed mediations. One SEM was conceptualized for each of the two criteria. Since our data were initially intended to be analyzed by means of manifest analyses, items had to be aggregated into parcels in order to balance the unfavorable relation between the large number of parameters to be estimated and the relatively small sample size. Both models showed overall good fit as indicated by the fit indices (life satisfaction model: $\chi^2(41, N = 180) = 71.92$, Bollen-Stine bootstrap $p = 0.03$; CFI = 0.97, RMSEA = 0.06, SRMR = 0.05; happiness model: $\chi^2(40, N = 180) = 85.20$, Bollen-Stine bootstrap $p = 0.01$; CFI = 0.95; RMSEA = 0.08, SRMR = 0.06; see Hu & Bentler, 1999). The bootstrapped estimates of the indirect effects and the respective confidence intervals confirmed the conclusions of our manifest analyses indicating that the mediating effect of self-efficacy is not merely due to shared variance between personality factors. However, since parceling is seen controversial due to its inherent risk of model misspecification (Little, Cunningham, Shahar & Widaman, 2002) these latent analyses should not be regarded as more appropriate than the reported manifest ones.

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