

Subjective Well-being:

Above Neuroticism and Extraversion, Autonomy Motivation Matters

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Abstract

This study tested whether general causality orientations explained unique variance in subjective well-being (SWB). That is, whether autonomy and impersonal orientations predicted SWB above trait dispositions. Hypotheses were tested by structural equation modeling (SEM) of data from a large sample (N = 1181). Results showed that a higher autonomy orientation predicted increased SWB above neuroticism and extraversion, whereas impersonal orientation was non-significant. Based on these results and the principles of integrative personality psychology, we argue that such distinct individual differences should be considered together in personality explanations of behavior.

Introduction

Being happy and leading satisfying lives reflect important concerns of most people (Diener, Oishi, & Lucas, 2003). Happiness and satisfaction are studied as subjective well-being (SWB), which comprises life-satisfaction, positive affect, and lack of negative affect (Diener et al., 2003; Schimmack, 2008). Examples of positive affect are feelings of energy and engagement, and examples of negative affect are distress and anxiety. A high degree of SWB impacts other aspects of life. Thus, high levels of positive affect foster sociability and physical health (Lyubomirsky, King, & Diener, 2005), indicating that SWB is more than just a pleasant state of mind. But individuals are not equally likely to achieve high levels of SWB. Specifically, personality traits such as extraversion and neuroticism are strong predictors of SWB (Costa & McCrae, 1980; Steel, Schmidt & Schultz, 2008).

Personality is not limited to trait dispositions, but encompasses motivational aspects such as regulation of motivation (McAdams & Pals, 2006). Capturing such regulations, general causality orientations are defined as “relatively enduring aspects of people that characterize the source of initiation and regulation, and thus the degree of self-determination, of their behavior” (Deci & Ryan, 1985, p. 109) and they influence affect, cognition, and observed behavior (Deci & Ryan, 2000). We examined whether differences in causality orientations explained SWB above neuroticism and extraversion. Below, we first describe traits and causality orientations. Then we review studies that have examined relations between causality orientations and SWB. Finally, we outline the hypotheses for this study.

Traits are described as de-contextualized, genetically determined, biologically based, and stable individual differences that account for the consistency in a person's thoughts, feelings, and actions. Traits are organized according to five domains: Neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (McCrae & Costa, 2008). Neuroticism reflects tendencies towards intensity and frequency of negative emotions and thoughts, whereas extraversion reflects tendencies towards intensity and frequency of positive emotions and thoughts (McCrae & Costa, 2008). Many studies

have found that neuroticism and extraversion predict SWB (i.e., Steel et al., 2008). However, these two domains encompass more than stable positive and stable negative emotions. Exceeding negative affect, neuroticism includes tendencies towards self-critical thoughts (i.e., prolonged rumination), social vulnerability, as well as avoidance strategies (e.g., Ozer & Benet-Martínez, 2006); and beyond positive affect, extraversion includes tendencies towards social and status engagements (i.e., dominance), adventurous yearnings, as well as approach strategies. Since neuroticism and extraversion are the strongest predictors of SWB, we directed our focus towards these two traits (Steele et al., 2008).

According to Self-Determination Theory (SDT), causality orientations are modes of general motivational regulation that develop as the products of social interaction (Deci & Ryan, 2000). SDT researchers have conceptualized three such modes: (1) *Intrinsic motivation* refers to autonomous self-regulation of behavior (i.e., determined by volition, interest, and enjoyment). Autonomy oriented individuals typically regulate themselves according to personalized goals, as well as their own standards and beliefs (Deci & Ryan, 2000). Such individuals display higher levels of reflection (e.g., Thomsen, Tønnesvang, Schnieber & Olesen, 2011), experience more well-being (Deci & Ryan, 1985), and have a more secure sense of self-worth (Hodgins & Knee, 2002; Hodgins, 2008). (2) *Extrinsic motivation* refers to controlled regulation of behavior (i.e., determined by reward and punishment, by feelings of pride or shame, or by simple rationales). Control oriented individuals typically regulate themselves in accordance with or defiance against social norms, cultural values, and external demands (Deci & Ryan, 2000). (3) *Amotivation* refers to poor or impersonal regulation of behavior (i.e., the experience of determination incompetence). Impersonally orientated individuals may experience events as out of their control and tend to feel unable to act in ways that could lead them towards desired outcomes (Deci & Ryan, 1985). Instead, they often turn to satisfying immediate addictions or they become overwhelmed by depressive moods (Deci & Ryan, 2000). They show lower levels of reflection (e.g., Thomsen et al., 2011), and display both helplessness and several forms of ill-being (Deci & Ryan, 1985; Hodgins & Knee, 2002; Hodgins, 2008).

The relationship between causality orientations and SWB has been examined in several studies. Three correlational studies examined emotions and found that autonomy orientation was related to increased positive affect and reduced negative affect, and impersonal orientation was related to increased negative affect (Deci & Ryan, 1985; Luyckx et al., 2007, 2010). Two other correlational studies examined well-being at work, one study found that autonomy orientation was related to increased job-satisfaction (Lam & Gurland, 2008), while another study found no relationship (Baard, Deci & Ryan, 2004). Two experimental studies found that individuals high in autonomy orientation experienced reduced negative affect after performance feed-back (Bober & Grolnick, 1995; Neighbors & Knee, 2003), though a third study found no effect (Knee & Zuckerman, 1996). A fourth study found that individuals high in autonomy orientation experienced increased positive affect and reduced negative affect when integrating negative events into their life-story (Weinstein, Deci & Ryan, 2011). Finally, a fifth study, which controlled for neuroticism, found that individuals high in autonomy orientation experienced increased well-being after an expressive writing assignment (Weinstein & Hodgins, 2009). Most studies have found no relation between control orientation and SWB (Baard et al., 2004; Bober & Grolnick, 1995; Knee & Zuckerman, 1996; Lam & Gurland, 2008; Luyckx et al., 2007, 2010; Neighbors & Knee, 2003; Weinstein & Hodgins, 2009; for exceptions see Deci & Ryan, 1985 and Weinstein et al., 2011). With respect to autonomy and impersonal orientation, the above studies suggest that autonomy orientation is positively related to SWB and that impersonal orientation is negatively related. Hence, we focused on autonomy and impersonal orientations as positive and negative predictors of SWB in the present study.

The findings that personality traits and causality orientations are both related to SWB, raises the question whether causality orientations explain SWB above traits. Relevant to this question, two previous studies have shown that causality orientations and personality traits are conceptually independent (Olesen, Thomsen, Schnieber & Tønnesvang, 2010; Olesen, 2011). Autonomy orientation was related to extraversion, agreeableness, and openness, but still emerged as an independent factor in both exploratory and confirmatory analyses. Impersonal orientation was strongly related to neuroticism (and related to

reversed extraversion), but still emerged as an independent factor. Since these studies suggest that causality orientations are conceptually distinct from, but related to personality traits, and since causality orientations predict SWB, we expected that causality orientations would explain unique variance in SWB.

Specifically, we hypothesized that autonomy orientation would predict SWB above neuroticism and extraversion (i.e., as indicated by a significant positive relationship). We tested this hypothesis in a structural regression model, in which latent factors for neuroticism, extraversion, and autonomy orientation predicted latent SWB. Similarly, we hypothesized that impersonal orientation would predict SWB above neuroticism and extraversion (i.e., as indicated by a significant negative relationship). We tested this hypothesis in a subsequent model, in which latent factors for neuroticism, extraversion, and impersonal orientation predicted latent SWB. Thus, if causality orientations maintained significant relationships with SWB in these analyses, it would confirm our hypotheses.

Method

Participants and recruitment

We collected data from first year students at Aarhus University (AU). The sample consisted of 1181 students (59.01% women), age $M = 21.80$, $SD = 4.36$. The response rate was 21.3%. Recruitment took place in collaboration with the AU Registry. The researchers received a list, which contained e-mail addresses for all students. The researchers sent out invitations to participate. The welcoming page of the questionnaire served as an informed consent form, which the participants had to accept.

Materials

Participants completed a number of questionnaires. Traits were measured by the Danish NEO Five Factor Inventory (NEO-FFI, Costa & McCrae, 2004). The 60 item NEO-FFI assesses dimensions of

neuroticism, extraversion, openness, agreeableness, and conscientiousness. Items consist of general personality statements, which are scored by self-report on scales ranging from 0- *strongly disagree* to 4- *strongly agree*. Descriptive statistics and internal reliabilities for neuroticism and extraversion are reported in Table 1.

Causality orientations were measured by an extended version of the General Causality Orientation Scale, GCOS (Deci & Ryan, 1985; see Ryan, 1989; for Danish translation see Thomsen et al., 2011, study 1). The 51 items assess dimensions of autonomy, control, and impersonal orientations. Items are arranged in threes within 17 vignettes. A vignette first describes a psycho-social challenge (e.g., being turned down for a job). The three items that follow are associated with autonomy, control, and impersonal orientations and describe prototypical responses to the challenge. Each item is scored by self-report on scales that range from 1- *very uncharacteristic* to 7- *very characteristic*. Descriptive statistics and internal reliabilities for autonomy and impersonal orientations are reported in Table 1.

SWB was measured by the Positive and Negative Affect Schedule (PANAS, Watson et al., 1988; for Danish translation see Ebbesen et al., 2006) and Satisfaction with Life Scale (SWLS, Diener, Emmons, Larsen & Griffin, 1985; for Danish translation see Mehlsen et al., 2005). The PANAS assesses dimensions of positive and negative affect by 20 items that describe emotional experiences (Watson et al., 1988). Each item is scored by self-report on scales that range from 1- *very slightly or not at all* to 5- *extremely*. The scale indicates to what extent the participants experienced the particular emotion during the past week. SWLS assesses current life-satisfaction by 5 items that describe evaluation statements (e.g., "I am satisfied with my current life", Diener et al., 1985). Each item is scored by self-report on scales that range from 1- *strongly disagree* to 7- *strongly agree*. Descriptive statistics and internal reliabilities for SWB subscales are reported in Table 1.

Analyses

Two models were specified and estimated using the robust maximum likelihood method in analyses of variances and covariances (i.e., Lisrel 8.8, Jöreskog, Sörbom, Du Toit, & Du Toit, 2001). Factors were scaled using unit loading identification constraints. Both models included latent neuroticism and extraversion factors, which were indicated by six parcels each (i.e., summed pairs of facet loading item as arranged within the FFM¹, Costa & McCrae, 2004). This way of specifying latent trait factors has been applied previously (Olesen et al., 2010; Olesen, 2011). Further, both models included one latent variable for SWB, which was indicated by the sum scores for positive and negative affect as well as life-satisfaction. We allowed the error terms of the PANAS indicators to correlate. Specifying a SWB factor, which functions analogously to a well-being composite, has been widely applied previously (Diener et al., 2003; Schimmack, 2008). Finally, we included a latent variable for autonomy orientation in the first model (i.e., Figure 1) and impersonal orientation in the second model (i.e., Figure 2). Autonomy and impersonal orientations were indicated by their respective 17 non-parceled items. This way of specifying latent causality orientations has previously been applied (Olesen et al., 2010; Olesen, 2011).

As shown in Figure 1, we tested a model, in which latent autonomy orientation was specified (i.e., along with latent neuroticism and extraversion) as an exogenous predictor of endogenous SWB. As shown in Figure 2, we also tested a second model, in which latent impersonal orientation was specified (i.e., along with latent neuroticism and extraversion) as a predictor of SWB.

The model fits were evaluated by five goodness-of-fit indices before interpreting regression equations: Robust chi-square based on the Satorra & Bentler correction (S-B chi-square, 1994); incremental values in the comparative fit index (CFI, Bentler, 1990) and non-normed fit index (NNFI or TLI, Tucker & Lewis, 1973); absolute values in the root means square error of approximation with its 90% confidence

¹ The Danish version of NEO-FFI was constructed by including the two items with the highest second order facet-loadings (30 pairs) from the NEO Personality Inventory –Revised (Costa & McCrae, 2004).

interval (RMSEA; Steiger, 1990) and the standardized root mean square residual (SRMR; Jöreskog et al., 2001). Hu & Bentler (1999) suggested that a relatively good fit can be determined upon a non-significant chi-square, CFI and NNFI/TLI > .95, RMSEA < .06, and SRMR < .08. However, the chi-square and incremental values are punitive towards complex models (Marsh, Hau & Wen, 2004). Thus, in the present study, and in accordance with previous studies (Olesen et al., 2010; Olesen, 2011), the models were interpreted as providing a reasonable approximation of the data given a significant S-B chi-square, CFI and NNFI/TLI > .90, RMSEA < .08, and SRMR < .10.

Results

Means and standard deviations for neuroticism and extraversion, autonomy and impersonal orientations, affects, and satisfaction are reported in Table 1. In addition, zero-order correlations between these variables are reported in Table 2. Note that all variables were significantly correlated, except autonomy orientation and neuroticism, and autonomy and negative affect. Also, the impersonal orientation showed a large positive correlation with neuroticism and a large negative correlation with extraversion.

To test whether autonomy orientation predicted SWB above neuroticism and extraversion, we specified a SEM model with corresponding factors and regression coefficients (see Figure 1). According to the relaxed criteria, the model provided a reasonable approximation of the data (S-B $\chi^2(457) = 1981.76, p < .001$; CFI = .93; NNFI/TLI = .93; RMSEA = .053 [.051; .056]; SRMR = .069). The absolute values even met the Hu & Bentler (1999) criteria. Most central to our hypothesis, a positive and significant regression for the autonomy factor indicated that autonomy orientation explained unique variance in SWB. That is, autonomy orientation predicted SWB above neuroticism, a negative predictor of SWB; and extraversion, a positive predictor (at the .05 level).

To test whether the impersonal orientation predicted SWB above neuroticism and extraversion, we specified a second model with corresponding factors and regressions (see Figure 2). The model did not provide a reasonable approximation of the data ($S-B \chi^2(457) = 3926.75, p < .001$; CFI = .90; NNFI/TLI = .89; RMSEA = .080 [.078; .083]; SRMR = .077). That is, the RMSEA almost satisfied relaxed criteria, and the SRMR met the Hu & Bentler (1999) criteria, but taken as a whole this model did not fit. Most central to our hypothesis, a non-significant regression for the impersonal factor indicated that impersonal orientation did not explain unique variance in SWB. That is, impersonal orientation did not predict SWB when controlling for neuroticism and extraversion².

Discussion

Our purpose was to examine whether causality orientations explained unique variance in SWB. That is, whether autonomy and impersonal orientations predicted SWB above neuroticism and extraversion. We applied SEM and specified latent SWB as the dependent variable. In the first model, we specified latent autonomy as an independent predictor along with latent neuroticism and extraversion; the second model was similar, except we specified latent impersonal orientation as an independent predictor instead of latent autonomy. Whereas higher autonomy orientation predicted higher SWB in the first model, impersonal orientation did not predict reduced SWB in the second model.

Autonomy orientation predicted SWB above neuroticism and extraversion. Although neuroticism was still the primary and negative predictor, the positive relationship between autonomy orientation and SWB was stronger than the association between extraversion and SWB (which was only significant at the .05 level). Thus, an orientation towards volition, interest, and enjoyment, appears to foster well-being. The autonomy orientation and SWB relationship could be attributed to autonomous

² We tested a similar model for control orientation, which fitted the data according to relaxed criteria, but the regression for control orientation was non-significant ($p > .05$).

individuals regulating their behaviors according to more personalized goals, standards, and beliefs, which in turn will satisfy their basic psychological needs (Deci & Ryan, 2000). For instance, studies have shown that autonomous individuals tend to adopt “intrinsic” goals, which sustain SWB (Niemic, Ryan & Deci, 2009; Kasser & Ryan, 1993). The autonomy orientation and SWB relationship could also be attributed to autonomous individuals displaying higher levels of reflection (Hodgins & Knee, 2002; Thomsen et al., 2011) and a secure sense of self-worth (Hodgins, 2008), which in turn protect them against prolonged effects of negative events. For instance, studies show that autonomous individuals gain more SWB benefits from expressive writing exercises (Weinstein & Hodgins, 2009), and autonomous individuals also experience higher levels of SWB when integrating negative events into their life-stories (Weinstein et al., 2011).

Impersonal orientation did not explain unique variance in SWB. Rather, neuroticism was the primary predictor, while extraversion also predicted SWB. It thus appears that an orientation towards incompetence in the determination of behavior does not make a person experience any less well-being than what is already explained by traits. Albeit speculative, this could be due to overlaps in negative affect tendencies in the neuroticism and impersonal orientation concepts (Olesen et al., 2010; Olesen, 2011). Further, this result indicates, that with respect to SWB, the impersonal orientation does not encompass other relevant aspects of personality than traits. The current relationship between neuroticism and impersonal orientation could then be explained by reference to types of goals pursued. Neuroticism includes inhibition strategies, which are associated with the pursuit of avoidance goals or avoiding outcomes (e.g., “avoid showing my lack of self-confidence”; Elliot, Sheldon, & Church, 1997). Since avoidance goals are hard to achieve, they may over time result in feelings of incompetence and unhappiness (Elliot et al., 1997), both of which are central to the concept and operationalization of impersonal orientation. Such a pathway between neuroticism and impersonal orientation may explain why impersonal orientation did not predict unique variance in the SWB experiences.

The study replicated previous findings that neuroticism and extraversion traits predict SWB (Steel et al., 2008). The relationships between neuroticism, extraversion, and SWB may occur because of both direct and indirect effects. Direct effects are effects in which individuals, who are high in neuroticism and low in extraversion, will interpret most external events in a pessimistic light, and thus react with behavioral inhibition (Costa & McCrae, 1980; Steel et al., 2008). Individuals, who are low in neuroticism and high in extraversion, will interpret the same events in an optimistic light, and thus react with behavioral activation. In contrast, indirect effects are effects in which neuroticism and extraversion inhibit or facilitate the individual's behavior, which in turn evokes different social responses. Neurotic individuals are often constrained by social anxiety and they tend to isolate themselves. Neurotic individuals thus evoke more discouraging social responses that feed-back to the individual as an ill-being risk factor (McCrae & Costa, 2008; Steel et al., 2008). Extraverted individuals are often outgoing and they tend to engage themselves. Extraverted individuals thus evoke more encouraging social responses that feed-back to the individual as a protective factor. In several respects, the combination of highly neurotic and low extraverted dispositions thus describes a fragile and vulnerable personality structure.

The present results for autonomy orientation are consistent with integrative personality psychology in that traits represent the principle of stable dispositions, and causality orientations, which are thought to be developed through social interactions, represent the principle of characteristic adaptations (i.e. contextualized, motivational, social-cognitive, and malleable differences, McAdams & Pals, 2006). Integrative personality psychology claims that distinct but related principles of individual differences contribute independently to the explanation of behavior. Previous studies have shown that causality orientations are conceptually distinct from traits (Olesen et al., 2010; Olesen 2011), and the present study showed that autonomy orientation independently predicted SWB, even at a higher level than extraversion. Together, these studies illustrate the advantage of considering different principles of individual differences; both in relation to each other, and in relation to predicting outcomes of personality. In addition, the results support the central role of autonomy, a cornerstone of SDT, for well-being. Since autonomous regulation

depends on psychological need satisfaction, these results have implications for how SWB may be improved. Thus, regardless of traits, providing environments where individuals' basic needs are fulfilled would increase autonomous regulation and may lead to improved SWB (Deci & Ryan, 2000).

Limitations of the present study include use of a student sample and a low response rate (21.3%). Both raise concerns about the generalizability of our findings. Another limitation is that the study is cross-sectional, and the results need to be replicated in prospective studies, perhaps using experience-sampling to collect measures of SWB. There are also other well-being concepts, such as the notion of "eudaimonia", which might be worthy of an examination. Whereas SWB refers to "hedonic" outcomes in a more narrow sense (i.e., pleasure and happiness), eudaimonia refers to the broader process of living well (i.e., pursuing higher-order virtues, aspirations, and skills; Ryan, Huta & Deci, 2008). Notably, research inspired by SDT suggests that eudaimonic processes include self-actualization and fostering relationship intimacy, social adjustment, as well as healthy functioning. We thus suggest that future studies examine personality traits and causality orientations in relation to both eudaimonic and hedonic well-being.

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Table 1

Means, standard deviations, and cronbach's α for neuroticism and extraversion, autonomy and impersonal orientations, and SWB.

	<u>M</u>	<u>SD</u>	<u>α</u>
NEO-FFI			
Neuroticism	23.74	7.69	.84
Extraversion	30.43	7.11	.83
GCOS			
Autonomy	99.98	8.91	.79
Impersonal	61.77	13.83	.83
PANAS			
Positive affect	34.71	6.69	.84
Negative affect	20.76	6.48	.81
SWLS			
Life-Satisfaction	24.13	6.48	.86

Note. N = 1181. NEO-FFI = NEO Five-Factor Inventory. GCOS = General Causality Orientations Scale. SWB = Subjective Well-being. PANAS = Positive and Negative Affect Schedule. SWLS = Satisfaction with Life Scale.

Table 2

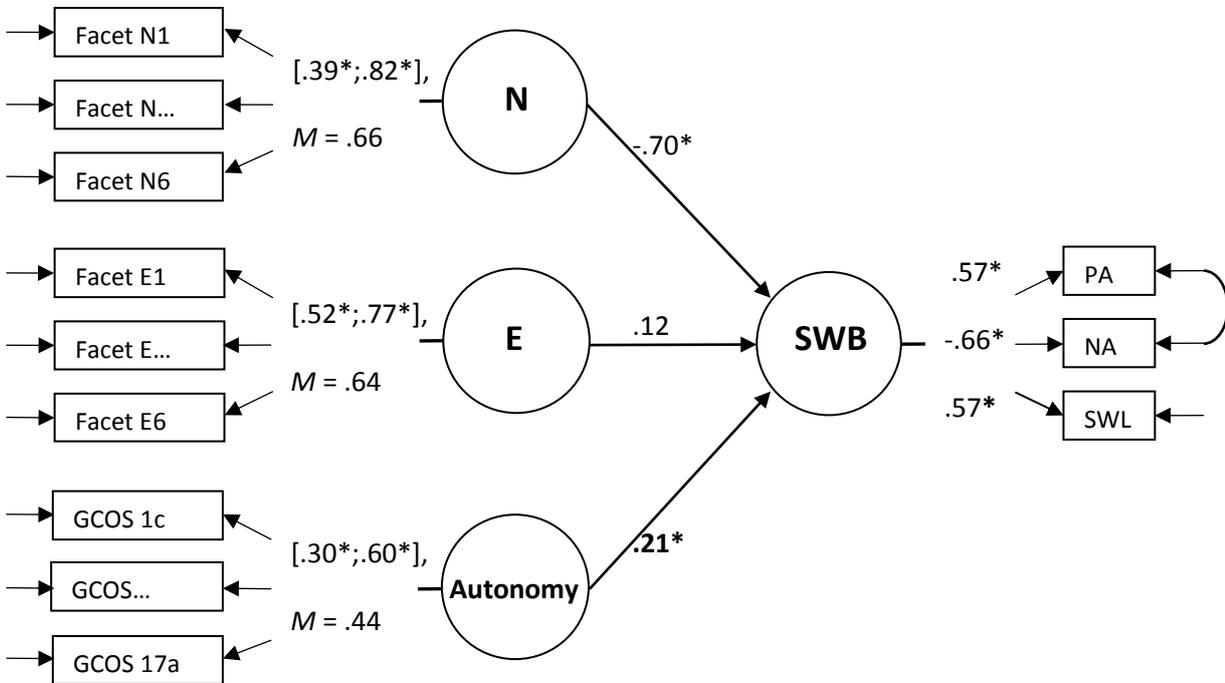
Zero-order correlations between the observed sum-scores for neuroticism and extraversion, autonomy and impersonal orientations, and SWB.

	(1.)	(2.)	(3.)	(4.)	(5.)	(6.)	(7.)
NEO-FFI							
1. Neuroticism	1						
2. Extraversion	-.39*	1					
GCOS							
3. Autonomy	-.07	.35*	1				
4. Impersonal	.56*	-.50*	-.18*	1			
PANAS							
5. Positive affect	-.29*	.42*	.35*	-.31*	1		
6. Negative affect	.57*	-.22*	-.04	.37*	-.14*	1	
SWLS							
7. Life-satisfaction	-.37*	.29*	.22*	-.25*	.36*	-.34*	1

*Note. N = 1181. NEO-FFI = NEO Five-Factor Inventory. GCOS = General Causality Orientations Scale. SWB = Subjective Well-being. PANAS = Positive Affect and Negative Affect Schedule. SWLS = Satisfaction with Life Scale. *p<.001.*

Fig. 1

Structural equation model for autonomy orientation.



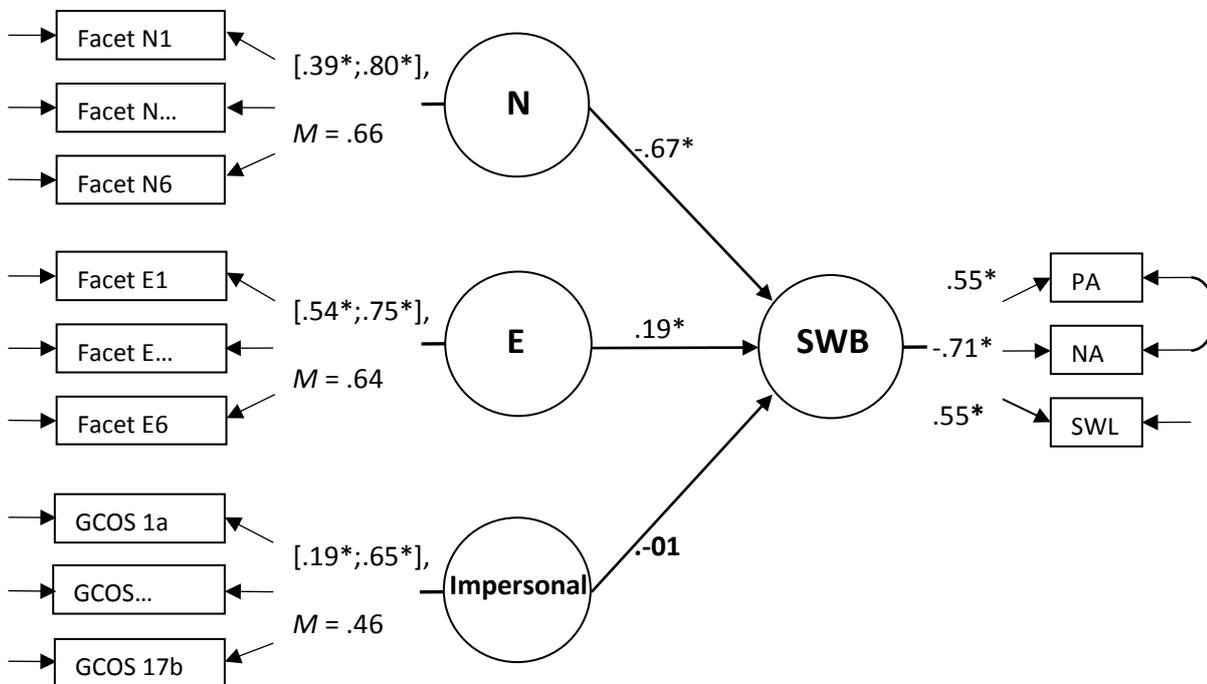
Note. Standardized parameter estimates. Exogenous factor-loadings are summarized by range and mean.

N = Neuroticism; E = Extraversion; SWB = Subjective well-being; PA = Positive affect; NA = Negative affect;

SWL = Satisfaction with life. *P<.001.

Fig. 2

Structural equation model for impersonal orientation.



Note. Standardized parameter estimates. Exogenous factors-loadings are summarized by range and mean.

N = Neuroticism; E = Extraversion; SWB = Subjective well-being; PA = Positive affect; NA = Negative affect;

SWL = Satisfaction with life. *P<.001.