

Personality and Life satisfaction:  
A Facet Level Analysis

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### Abstract

At the global level of the Big Five extraversion and neuroticism are the strongest predictors of life satisfaction. However, extraversion and neuroticism are multifaceted constructs that combine more specific traits. This article examined the contribution of facets of extraversion and neuroticism to life satisfaction in four studies. The depression facet of neuroticism and the Positive emotions/cheerfulness facet of extraversion were the strongest and most consistent predictors of life satisfaction. These two facets often accounted for more variance in life satisfaction than neuroticism and extraversion. The findings suggest that measures of depression and positive emotions/cheerfulness are necessary and sufficient to predict life satisfaction from personality traits. The results also lead to a more refined understanding of the specific personality traits that influence life satisfaction: depression is more important than anxiety or anger, and a cheerful temperament is more important than being active or sociable.

Personality and Life satisfaction:  
A Facet Level Analysis

Research in the past twenty years has made considerable progress in the assessment of personality traits (Costa & McCrae, 1992; Goldberg, 1990, 1997). Structural analyses of personality traits in diverse cultures reveal five global dimensions of individual differences: neuroticism, extraversion, openness to Experience, agreeableness, and conscientiousness (McCrae & Costa, 1997). These dimensions are known as the Big Five.

Researchers also have made progress in the study of subjective well-being (SWB; Diener, 1984; Diener, Suh, Lucas, & Smith, 1999). High SWB implies a happy life with many pleasant and few unpleasant experiences and high life satisfaction. One important finding in the SWB literature has been the demonstration that SWB is moderately stable over time and influenced by personality traits (Diener & Lucas, 1999). One consistent finding has been a strong link between extraversion and neuroticism and SWB (cf. Diener & Lucas, 1999). Despite considerable progress, several questions about the relation between personality and life satisfaction remain. Few studies have examined whether other personality traits are also related to SWB, and even fewer studies have compared the predictive validity of extraversion and neuroticism to those of other personality traits (cf. DeNeve & Cooper, 1998). Hence, it is currently unclear whether extraversion and neuroticism are sufficient or necessary to capture personality influences on SWB. The present article takes a closer look at this question by comparing the Big Five to a more comprehensive set of more specific personality traits.

*The Components of Subjective Well-Being (SWB)*

SWB researchers distinguish an affective and a cognitive component. The affective component of SWB is defined as the hedonic balance of pleasant and unpleasant experiences. An individual with many pleasant and few unpleasant experiences has high SWB. In contrast, an individual with few pleasant and many unpleasant experiences has low SWB. Personality traits have a strong influence on the affective component of SWB. Neuroticism is in part a disposition to experience more anger, fear, and sadness, and neuroticism is also related to frequent experiences of other unpleasant emotions (Izard, Libero, Putnam, & Haynes, 1993; Watson & Clark, 1992). Extraversion is a more multi-faceted construct, but one important facet of extraversion is the disposition to experience more pleasant emotions (Costa & McCrae, 1992; Izard et al., 1993; Watson & Clark, 1992). Not surprisingly, extraversion and neuroticism are strong predictors of the affective component of SWB (cf. Diener & Lucas, 1999). This finding is by no means trivial. For example, Costa and McCrae (1980) demonstrated that personality measures predicted hedonic balance 10 years later. Costa and McCrae (1980) proposed an influential model, in which extraversion leads to more pleasant experience and neuroticism leads to more unpleasant experiences. This model implies that extraversion and neuroticism are important determinants of SWB. However, this model focused exclusively on the affective component of SWB.

Relatively few studies have examined the influence of personality traits on the cognitive component of SWB. The cognitive component of SWB is assessed with life satisfaction judgments (e.g., "I am satisfied with my life."). Life satisfaction items ask respondents for a subjective evaluation of their lives. Respondents can use any information that they deem relevant. Hence, in theory life satisfaction judgments could be influenced by a variety of personality traits. For example, if people judged life satisfaction based on their incomes, conscientiousness would be

a predictor of life satisfaction because conscientiousness predicts higher incomes (Judge, Higgins, Thoresen, & Barrick, 1999).

The main aim of the present study is to provide a more detailed examination of the personality traits that influence life satisfaction. This article focuses on the cognitive component of SWB for a simple reason. The affective component of SWB is defined by a researcher. If a researcher defines hedonic balance as the balance of happiness and sadness, then personality dispositions to experience happiness and sadness are by definition the most important predictors. If another researcher includes anxiety and anger in the definition and assessment of hedonic balance, then dispositions to experience these emotions are bound to be additional predictors. In contrast, life satisfaction judgments are subjective judgments that allow respondents to use whatever information they deem relevant to evaluate their own lives. Hence, there is no a priori relation between personality traits and life satisfaction. Examining the relation between personality traits and life satisfaction may even refine the definition of the affective component of SWB. For example, Schimmack (2003) found that aggregated experiences of happiness were a better predictor of life satisfaction than a combined aggregate of happiness, pride, and affection, suggesting that happiness should be weighted more heavily in a measure of the affective component of SWB.

### *Personality and Life Satisfaction*

In studies of the relation between personality traits and life satisfaction, neuroticism and extraversion typically emerge as the strongest predictors (Diener & Lucas, 1999; Schimmack, Diener, & Oishi, 2002; Schimmack, Radhakrishnan, Oishi, Dzokoto, & Ahadi, 2002). However, this conclusion is limited by several factors. First, most of the studies relied exclusively on self-report measures. Hence, previous studies may have overestimated the strength of the relation between personality traits and life satisfaction due to the influence of response sets and

styles (cf. Schimmack, Bockenholt, & Reisenzein, 2002). Second, previous studies have assessed personality at the level of broad and global personality traits. It is possible that these studies have overlooked the contribution of more specific personality traits to life satisfaction.

For example, neuroticism represents the shared variance between anxiety, hostility, and depression, but it does not represent the unique variance in anxiety, hostility, and depression that is not shared with the other dimensions. It is possible that some of this specific variance is related to life satisfaction. Furthermore, it is possible that some of the more specific dimensions are more highly correlated with life satisfaction than are the global dimensions used in previous investigations. In the most extreme case, it is possible that a single specific dimension can account for the relation between personality and life satisfaction.

#### *Hierarchical Taxonomies of Personality*

Scientific taxonomies of individual differences are faced with a trade-off between bandwidth and fidelity or parsimony and precision (Hampson, John, & Goldberg, 1986; John, Hampson, & Goldberg, 1991; Paunonen, 1998; Paunonen & Ashton, 2001). Increasing the number of dimensions allows a more accurate description of individual differences, but makes the assessment of individual differences more laborious. The Big Five offer a solution to this problem. Assessing fewer than five dimensions lowers accuracy because the five dimensions provide largely independent information about different aspects of individual differences. Assessing more than five dimensions decrease parsimony because additional dimensions tend to be intercorrelated and provide partially redundant information.

However, the optimal number of dimensions ultimately depends on the weights attached to parsimony and precision. If precision were at a premium, it would be desirable to increase the number of dimensions to describe individual

differences even if these dimension were somewhat redundant (i.e., they share variance with each other). Indeed, standard personality questionnaires such as the NEO-PI-R (Costa & McCrae, 1992) and the 300-item version of the IPIP (Goldberg, 1997) allow researchers to describe personality in terms of the Big Five or in terms of six specific facets of each of the Big Five dimensions. Henceforth, we refer to these scales as the Lean Thirty.

Due to the hierarchical relation between the Big Five and the Lean Thirty, the latter scales contain all of the information about the Big Five dimensions. At the same time, they also provide additional information that is lost by aggregating them into the Big Five. Paunonen (1998) warned that "aggregating personality traits into their underlying personality factors could result in decreased predictive accuracy due to the loss of trait-specific but criterion-valid variance" (p. 538). Hence, researchers may be discarding important information when they first assess the Lean Thirty and then aggregate lean scales into the Big Five. Similarly, shorter questionnaires that assess only the global Big Five dimensions may fail to include more specific personality factors that influence life satisfaction. To address these concerns, it is important to examine the relation between the Lean Thirty and life satisfaction.

A better understanding of the relation between the Lean Thirty and life satisfaction provides several benefits for future SWB research. First, the results of these studies are necessary for more refined theories of the personality influences on SWB. The main advantage of broad constructs such as neuroticism and extraversion is that they predict a wide variety of behaviors and experiences with a relatively small set of personality dimensions. However, broad traits are more difficult to understand than more specific traits. As noted by Costa and McCrae (1998) the understanding of broad traits like neuroticism is based on the specific traits that define it. Hence, finding the specific traits of a global factor that relate

most closely to life satisfaction leads to a better understanding of personality influences on life satisfaction.

For example, imagine that the main facet of extraversion that predicts life satisfaction were warmth/friendliness. In this scenario, researchers would pursue future research by examining the role of social relations, interactions, friendships, etc. as determinants of life satisfaction. Now, imagine that the main facet of extraversion that predicts life satisfaction were activity level. In this case, researchers would examine other variables such as achievements, career choices, etc. Similarly, different aspects of neuroticism suggest different theories of SWB. The facets anxiety and vulnerability would suggest responsiveness to stress and uncertainty as determinants of life satisfaction, whereas the depression facet suggests a lack of meaning and purpose in life as causes of low life satisfaction.

The search for lean predictors can also lead to a leaner assessment of personality in future studies of life satisfaction. If the personality variance in life satisfaction could be assessed with a few lean scales, researchers could routinely include personality measures in their studies, while it is impossible to include the NEO-PI-R or the IPIP-300 in each study. To illustrate, a complete assessment of the Big Five with the NEO-PI-R or the IPIP takes about 45 minutes. Few researchers would be willing to include these measures if they were not genuinely interested in personality. However, the assessment of a single lean dimension takes only about two minutes. If a few lean dimensions were sufficient to capture the personality variance in life satisfaction, more researchers could routinely assess these dimensions in their studies. The inclusion of personality measures in more studies of SWB would be helpful to address the third-variable problem in correlational research. For example, a researcher may find a significant correlation between financial satisfaction and life satisfaction, suggesting that financial satisfaction influences life satisfaction. The interpretation of this finding would

change dramatically, if this correlation were no longer significant after controlling for a personality trait (e.g., neuroticism). In this case, it would be more likely that personality influences life satisfaction and financial satisfaction.

### *Theoretical Predictions*

We had several predictions about personality traits that influence life satisfaction. These predictions were largely derived from the mediator model of personality influences on life satisfaction (Schimmack, Diener, et al., 2002; Schimmack, Radhakrishnan et al., 2002). The mediator model assumes that extraversion and neuroticism have a strong influence on the affective component of SWB. Extraverts have a more positive hedonic balance (pleasant minus unpleasant affect) than introverts, and neurotic individuals have a more negative hedonic balance than emotionally stable individuals (Costa & McCrae, 1980; Diener & Lucas, 1999). The mediator model also assumes that people rely on their hedonic balance to judge life satisfaction. People who have a more positive hedonic balance judge their lives to be more satisfying. Finally, the mediator model postulates that the influence of extraversion and neuroticism on life satisfaction is almost completely mediated by hedonic balance. That is, neuroticism and extraversion predict life satisfaction because they influence affective experiences and people rely on affective experiences to judge life satisfaction. Based on this model, we can predict that facets of extraversion and neuroticism that are dispositions to experience pleasant or unpleasant emotions should be most closely related to life satisfaction. For neuroticism, these are the facets anxiety, anger, and depression (Costa & McCrae, 1992). Although we expect all three facets to be correlated with life satisfaction, we also predicted that the depression facet should be the strongest predictor of life satisfaction. This prediction is based on the assumption that suicide attempts are an indicator of low life satisfaction and the finding that depression is a stronger predictor of suicide attempts than anxiety (Placidi,

Oquendo, Malone, Brodsky, Ellis, & Mann, 2000; Scocco, Marietta, Tonietto, Buono, & De Leo, 2000).

For extraversion the facet most closely related to affective experiences is the positive-emotions facet in the NEO-PI-R and the equivalent cheerfulness facet in the IPIP (Goldberg, 1997). People with a cheerful temperament have more positive affective experiences, leading to higher levels of life satisfaction. We also predict that the excitement-seeking facet of extraversion does not predict life satisfaction. This prediction is based on empirical data (Oishi, Schimmack, & Diener, 2001), and the value-as-a-moderator model (Oishi, Diener, Suh, & Lucas, 1999). The influence of excitement seeking on life satisfaction depends on situational factors. Excitement seekers have high life satisfaction when their lives are filled with excitement, but they have low life satisfaction when nothing exciting is happening. On average, excitement seeking is not related to life satisfaction just like other values and goals are moderators of situational effects on life satisfaction, but not directly related to life satisfaction.

## Study 1

### *Method*

Participants. The data of this study were obtained from 136 students at the University of Illinois, Urbana-Champaign. The sample included 100 female and 36 male participants, who were on average 20 years old. Students participated in this data collection as part of a course on personality.

Materials and procedure. During the first weeks of the class participants completed the NEO-PI-R (Costa & McCrae, 1992). This 240-item questionnaire assesses the Big Five and six facets of the Big Five with 8 items for each facet. Life satisfaction was assessed with the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). The SWLS is a 5-item scale with good psychometric properties. The items are (a) “In most ways my life is close to ideal,

(b) "The conditions of my life are excellent," (c) "I am satisfied with my life," (d) "So far I have gotten the important things I want in my life," and (e) "If I could live my life over, I would change almost nothing". Responses were made on a 7-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. It is important to note that the SWLS items do not share content with the personality items. None of the SWLS items mentions frequent experiences of happiness or depression. Participants completed the SWLS at the beginning of the semester, but not at the same time as the personality measure. They repeated SWLS ratings two times in monthly intervals.

Participants distributed questionnaires with the SWLS items to two friends and two family members. Most of the family reports were completed by parents and siblings. The informants rated participants' life satisfaction and mailed completed questionnaires to the experimenters. Both self reports and informant reports of SWLS had good reliabilities (Cronbach's alpha > .80). Furthermore, families' and friends' reports showed moderate convergent validity. The correlation between averaged family reports and friend reports was  $r = .36$ . We combined families' and friends' reports to increase the validity of informant reports.

### *Results*

Simple correlations. Table 1 shows the correlations between the global and specific personality dimensions of extraversion and neuroticism with life satisfaction. Consistent with previous findings, extraversion and neuroticism were significant predictors of life satisfaction. Furthermore, all subscales of neuroticism were negatively correlated with life satisfaction. However, not all of the extraversion subscales were consistently related to life satisfaction. Only warmth, gregariousness, and positive emotions were consistently correlated with life satisfaction. depression was more highly related to life satisfaction than was

neuroticism, and positive emotions was more highly related to life satisfaction than was extraversion.

Stepwise regression analyses. To examine the unique contribution of extraversion and neuroticism facets to life satisfaction, we conducted a series of stepwise regression analysis. These analyses start with the strongest predictor and add additional predictors if they explain significant additional variance in the criterion. We set the inclusion criterion to  $p = .10$ . Table 2 shows that depression and positive emotions were the first two predictors in all analyses with self reports as criterion. Depression was also the first predictor in the analyses with informant reports of life satisfaction as criterion. However, warmth rather than positive emotions was the second predictor.

Global versus specific predictors. We conducted hierarchical regression analyses to examine the predictive validity of global and specific personality dimensions (Table 3). In the first analyses, we entered extraversion and neuroticism in the first step and then entered depression and positive emotions in the second step. This analysis was repeated for all four measures of life satisfaction. The next analyses reversed the order of the predictors. Depression and positive emotions predicted life satisfaction above and beyond extraversion and neuroticism. However, extraversion and neuroticism failed to predict life satisfaction above and beyond depression and positive emotions. These analyses demonstrate that two facets of extraversion and neuroticism are better predictors of life satisfaction than are extraversion and neuroticism themselves.

What about the other Big Five dimensions? We also examined whether personality dimensions belonging to the other three dimensions of the Big Five added to the prediction of life satisfaction. Simple correlations revealed some positive relations of conscientiousness with life satisfaction. However, partial correlations revealed that conscientiousness did not explain unique variance in life

satisfaction after controlling for the influences of positive emotions and depression (Table 4).

A method-free estimate of personality influences on life satisfaction. One shortcoming of many previous studies was the exclusive reliance on self reports to assess personality and SWB. Table 3 reveals clear evidence for method-specific variance. Whereas depression and positive emotions explained about 30% of the variance in self-reported life satisfaction, the two personality traits explained only 17% of the variance in informant reports of life satisfaction. To estimate the contribution of personality traits to life satisfaction independent of method, we compared the simple correlation between self-reports and informant reports of life satisfaction to the part (or semipartial) correlation between the two life satisfaction measures, while controlling for depression and positive emotions. The simple correlation between self-reports and informant reports of life satisfaction was  $r = .49$  ( $N = 136$ ). The part correlation was  $r = .31$ . These correlations imply that the two life-satisfaction measures share 25% (i.e.  $.49^2$ ) of their total variances and 10% (i.e.,  $.31^2$ ) of their total variances are not shared with the personality variables. Hence, 15% (i.e., 25%-10%) of the shared variance between the two life satisfaction measures is explained by depression and positive emotions. In other words, the personality variables account for 60% (i.e.,  $.15/.25$ ) of the shared variance between the two life satisfaction measures. The estimate dropped to 45%, when extraversion and neuroticism were used to estimate the contribution of personality to life satisfaction. In sum, these analyses reveal that depression and positive emotions account for a large portion of the method-invariant variance in life satisfaction.

### *Discussion*

Study 1 examined the personality predictors of life satisfaction at two levels of specificity. Consistent with previous findings, extraversion and neuroticism

were significant predictors of life satisfaction when personality was assessed at the level of the Big Five (Diener & Lucas, 1999). Analyses at the level of the Lean Thirty revealed that positive emotions and depression were strong predictors of life satisfaction. Comparisons across levels revealed that depression was a stronger predictor of life satisfaction than was neuroticism, and positive emotions was a stronger predictor of life satisfaction than was extraversion, although the latter finding did not hold for informant reports of life satisfaction.

The results demonstrate that a more precise assessment of personality at the level of lean facets increased the variance that personality traits explain in life satisfaction. Furthermore, the findings deepen the understanding of subjective well-being. Previous theories of SWB implicitly assumed that all negative emotions are equally detrimental for SWB. However, the present findings suggest that a disposition for depression has more severe effects on life satisfaction than dispositions for other unpleasant emotions such as anxiety and hostility. This finding does not imply that the latter emotions are not related to life satisfaction. Rather, people who are prone to experience more anxiety and anger are also likely to experience more depression. This shared risk to experience more unpleasant emotions in general is captured in the global trait of neuroticism, which is strongly related to life satisfaction. However, a specific disposition to experience more anxiety or anger that is not related to more experiences of depression is not related to life satisfaction, whereas a specific disposition to experience more depression is related to life satisfaction. Hence, it is the global disposition to experience more unpleasant emotions and a specific disposition to experience more depression that are important for the prediction of life satisfaction. As both components are captured in the depression scale, the depression scale is both necessary and sufficient for predicting the influence of neuroticism-related facets on life satisfaction.

The results also provide important insights into the facets of extraversion that account for the relation between extraversion and life satisfaction, although the evidence was stronger for self-reported life satisfaction than for informant reports of life satisfaction. Consistent with previous findings and our predictions, excitement seeking failed to show significant simple correlations with life satisfaction. Hence, the excitement seeking facet of extraversion cannot explain the significant contribution of extraversion to life satisfaction. Also consistent with predictions, the positive emotions facet was the strongest predictor of self-reported life satisfaction. Other facets showed significant simple correlations, which were no longer significant after controlling for the shared variance with other extraversion facets. These findings suggest that the positive emotion facet of extraversion is sufficient to account for the relation between extraversion and life satisfaction. This finding has important implications for theories of the link between extraversion and life satisfaction. Some theories suggest that extraversion enhances well being because extraversion leads to better social relationships. Other theories assume that extraversion enhances well being because it is a disposition to have a more cheerful temperament. The present findings are more consistent with the latter hypothesis.

In sum, Study 1 suggested that depression and positive emotions are necessary and sufficient to account for the relation between personality, as measured by the NEO-PI-R, and life satisfaction. Study 1 also suggested that these two personality traits account for 60% of the method-invariant variance in life satisfaction.

## Study 2

The main purpose of Study 2 was to replicate the findings of Study 1 with an alternative personality measure. Whereas Study 1 used the NEO-PI-R (Costa & McCrae, 1992), Study 2 used the IPIP (Goldberg, 1997). Although both

questionnaires are designed to assess the same constructs and show high convergent validity, they use different items. If the results of Study 1 can be replicated with a different instrument, it is more likely that the results are based on the underlying constructs and not on superficial characteristics of the items used to assess the underlying constructs.

### *Method*

Participants. The data of this study were obtained from 124 students at the University of Illinois, Urbana-Champaign. The sample included 88 female and 36 male participants, who were on average 21 years old.

Materials and procedure. During the first weeks of the class participants completed the 300-item IPIP (Goldberg, 1997). The questionnaire assesses the six subscales of the Big Five with 10 items each. The questionnaire was designed to assess the same personality dimensions as the NEO-PI-R, although some dimensions are named differently (e.g., Friendliness = Warmth). Most important, the Positive emotions scale of the NEO-PI-R corresponds to the cheerfulness scale in the IPIP. Although it may be confusing for readers, we decided to use Goldberg's label when we refer to this facet of extraversion in the IPIP. Participants also completed the standard Satisfaction with Life Scale (SWLS; Diener et al., 1985) at the beginning (T1) and the end of the semester (T2). Participants distributed questionnaires with the SWLS items to two friends and two family members. The informants rated participants' life satisfaction and mailed completed questionnaires to the experimenters. The psychometric properties of these measures were similar to those in Study 1.

### *Results*

Simple correlations. Table 5 shows the correlations between the global and specific personality dimensions and life satisfaction. Consistent with previous findings, extraversion and neuroticism were significant predictors of life

satisfaction. Furthermore, nearly all facets of extraversion and neuroticism were significantly correlated with life satisfaction. However, the magnitude of these correlations varied greatly. depression and cheerfulness were the only subscales that were more highly correlated with life satisfaction than were extraversion and neuroticism.

Regression analyses. Regression analyses followed the same procedure as in Study 1 (Table 6). The results for self-reported life satisfaction replicated the findings of Study 1. depression and cheerfulness were the first two predictors in stepwise regression analyses. In Study 2, cheerfulness was also the second predictor after depression in the prediction of informant reports of life satisfaction. In sum, the results replicated Study 1's finding that depression and cheerfulness are the most important predictors of life satisfaction.

Global versus specific predictors. The analyses followed the procedure of Study 1. We conducted hierarchical regression analyses to examine the predictive validity of global and specific personality dimensions (Table 7). In the first analyses, we entered extraversion and neuroticism in the first step and then entered depression and cheerfulness in the second step. The next analyses reversed the order of the predictors. depression and cheerfulness predicted life satisfaction above and beyond extraversion and neuroticism. However, extraversion and neuroticism failed to predict life satisfaction above and beyond depression and cheerfulness. These analyses demonstrate that depression and cheerfulness are necessary and sufficient predictors of life satisfaction.

What about the other Big Five dimensions? We also examined whether personality dimensions belonging to the other three dimensions of the Big Five added to the prediction of life satisfaction. Simple correlations revealed positive relations of openness to experience and conscientiousness with life satisfaction.

However, partial correlations that controlled for cheerfulness and depression were no longer significant (Table 8).

A method-free estimate of personality influences on life satisfaction. As in Study 1, we used simple and part correlations between self-reports and informant reports of life satisfaction to examine the method-invariant contribution of personality to life satisfaction. To increase the validity of the self-report measures, we averaged the two self-report measures. The simple correlation between self-reports and informant reports of life satisfaction was  $r = .57$  ( $N = 124$ ). The part correlation was  $r = .41$  ( $N = 124$ ). These correlations imply that the two life satisfaction measures share 33% (i.e.  $.57^2$ ) of their total variances and 17% (i.e.,  $.41^2$ ) of their total variances are not shared with the personality variables. Hence, 16% (i.e., 33% - 17%) of the shared variance between the two life satisfaction measures is explained by depression and cheerfulness. In sum, the personality variables account for 49% (i.e.,  $.16/.33$ ) of the shared variance between the two life satisfaction measures. The estimate dropped to 30% when extraversion and neuroticism were used to estimate the contribution of personality to life satisfaction. In sum, the analyses replicated the findings of Study 1 that depression and cheerfulness account for about half of the method-invariant variance in life satisfaction.

### *Discussion*

Study 2 replicated the key findings of Study 1 with an alternative measure of personality. This finding is important because increasing numbers of predictors increase the likelihood of a Type I error (Paunonen, 1998). The results of Study 2 rule out this possibility. Even when personality dimensions were assessed with a different questionnaire, the same lean dimensions as in Study 1 predicted life satisfaction. Moreover, Study 2 found that depression and cheerfulness were the first two predictors of informant reports of life satisfaction.

### Study 3

Study 3 extends the previous two studies by using multiple personality measures, whereas life satisfaction was assessed only by self-reports. The data were collected as part of the Riverside Accuracy Project (Funder, 1995; Furr & Funder, 1998). In this project, students rated their personality on the complete NEO-PI-R. In addition, parents and peers also rated students' personality on the NEO-PI-R. As a result, it was possible to examine whether the previous findings would generalize to personality measures based on informant reports. Study 3 also addressed another limitation of the previous studies. Namely, most participants in the previous studies were women. Hence, it is uncertain whether the results generalize to male participants. Indeed, Herringer (1998) suggested that the assertiveness facet of extraversion predicts life satisfaction for men but not for women. Study 3 included a larger number of male participants, which allowed examining the possibility of sex differences in the contribution of personality traits to life satisfaction.

#### *Method*

Participants. The data of this study were obtained as part of the Riverside Accuracy Project (Funder, 1995; Furr & Funder, 1998). The total sample included 146 participants (82 women, 64 men). Due to missing data the correlations are based on smaller subsets of participants (see Table 9).

Materials and procedure. Participants completed the NEO-PI-R and rated life satisfaction on the Satisfaction with Life Scale (Diener et al., 1985). In addition, parents and peers completed informant reports of participants' personality on the NEO-PI-R (Costa & McCrae, 1992).

#### *Results*

Simple correlations. Table 9 shows the correlations between self-reports of life satisfaction and the three sets of personality ratings. The self ratings of

personality replicate the findings in Studies 1 and 2, namely depression and positive emotions were the facets that correlated most highly with life satisfaction. Peer reports showed the same pattern. However, parent reports showed the highest correlations for self-consciousness and assertiveness. Parent reports also failed to demonstrate a significant correlation between depression and life satisfaction, whereas the expected relation between positive emotions and life satisfaction was significant.

Stepwise regression analyses. To clarify the unique contribution of lean dimensions, we computed stepwise regression analyses (Table 10). Self-ratings replicated earlier findings that depression and positive emotions were the first two predictors entered in the equation. In addition, vulnerability emerged as a third predictor with unique variance. Peer reports of personality replicated the importance of depression and positive emotions, which were the only predictors that added unique variance. However, parent reports failed to replicate this pattern. Rather parents' ratings of assertiveness and anger/hostility were the two predictors with unique incremental variance.

Global versus specific predictors. A set of hierarchical regression analyses compared the predictive power of neuroticism and extraversion with the predictive power of the depression and positive emotions facets (Table 11). Self-reports replicated previous findings that the facets produced a significant increase in explained variance in addition to extraversion and neuroticism. However, in contrast to the previous studies, extraversion and neuroticism also contained unique variance that was not explained by the facets. Peer reports were more consistent with theoretical predictions: Facets produced an increase in predictive validity, but global scales did not contain any unique variance. Parent ratings showed a different pattern. Neither subscales nor global scales contained any significant unique variance.

*Sex Differences*

Herringer (1998) found that assertiveness predicted life satisfaction for men but not for women. We ran three regression analyses to test this prediction. In each regression model, sex and assertiveness were entered as predictors before the product of sex and assertiveness was entered in a second step. A significant increase in explained variance would indicate that assertiveness interacts with sex in the prediction of life satisfaction. Self-rated assertiveness failed to replicate Herringer's (1998) results,  $R^2$  change = .01,  $F(1,139) = 1.58$ ,  $p = .21$ . Parent and peer ratings of assertiveness also did not produce significant interactions with sex in the prediction of life satisfaction,  $F < 1.00$ . We also found no evidence that sex moderated the relationship between extraversion, neuroticism, depression, and positive emotions with life satisfaction.

*Discussion*

Study 3 examined the relation between personality and life satisfaction using multiple personality measures. The results were somewhat more mixed than in the previous studies, but in general supportive of our hypotheses. On the positive side, self-reports of personality replicated once more that depression and positive emotions predict unique variance in life satisfaction above and beyond the influence of other facets and the global traits. In addition, Study 3 demonstrated that this finding generalizes to peer ratings of personality. However, parent reports of personality failed to show the predicted pattern.

## Study 4

The previous studies used long questionnaires that were designed to assess facets of the Big Five. However, commonly researchers use shorter questionnaires if they want to measure the Big Five without an assessment of the facets. Study 4 compared the predictive validity of the depression and positive emotions facets to a

popular brief measure of extraversion and neuroticism; the 44-item Big Five Inventory (John, Donahue, & Kentle, 1991; John & Srivastava, 1999).

### *Method*

Participants. Three-hundred-and-forty four (255 female, 89 male) students at the University of Toronto participated in this study for course credit.

Materials and procedure. Life satisfaction was assessed with the satisfaction with life scale (Diener et al., 1985) at the beginning of the semester. Personality was assessed at the end of laboratory experiments over the following six months. Personality was assessed with a slightly modified version of the Big Five Inventory (John et al., 1991). The measure was designed to provide a short and reliable measure of the Big Five. An examination of the 8-item neuroticism scale revealed only one item of the depression facet of neuroticism (“is depressed and blue”). Most of the items belong to the vulnerability and anxiety facets. None of the 8 extraversion items belongs to the positive emotions facet. Most of the items tap activity level, assertiveness, and gregariousness. All items of the BFI were slightly modified to start with the lead in “I tend to be ...” For example, the original BFI item “I see myself as someone who has an assertive personality,” was modified to read “I tend to have an assertive personality.” To include measures of depression and positive emotions, we created two scales by taking items from the NEO-PI-R and the IPIP depression and Positive emotions/cheerfulness scales. The Positive emotions items were: I tend to “be a cheerful and high-spirited person,” “radiate joy,” have a lot of fun,” “be easily amused,” “joke around,” bubble with happiness,” amuse my friends,” “be in a good mood,” and “laugh easily.” The depression items were: I tend to “feel hopeless,” “feel discouraged,” “feel lonely,” “feel sad,” “experience a deep sense of guilt and sinfulness,” “blame myself when anything goes wrong,” “tend to be in a bad mood.” All scales had satisfactory reliability (Cronbach’s alpha > .70).

## Results and Discussion

Table 12 shows the simple correlations between life satisfaction and the five global and the two specific personality traits. Consistent with previous studies extraversion and neuroticism were more strongly correlated with life satisfaction than the other global dimensions. Consistent with the previous three studies, positive emotions and depression were more highly correlated with life satisfaction than extraversion and neuroticism. A stepwise regression analysis showed that positive emotions and depression were the only personality traits that explained unique variance in life satisfaction. Hierarchical regression analysis showed that depression and positive emotions explained 8% of unique variance in life satisfaction, whereas neuroticism and extraversion accounted for 0% unique variance in life satisfaction. Another noteworthy finding was that the single depression item of the BFI neuroticism scale was more highly correlated with life satisfaction ( $r = -.34$ ) than the 8-item neuroticism scale ( $r = -.30$ ) and a 7-item neuroticism scale that excluded the one depression item ( $r = -.27$ ). In sum, the results provide further evidence that neuroticism and extraversion are multi-faceted construct and that the depression and positive emotion facets are necessary and sufficient for the assessment of personality influences on life satisfaction.

## General Discussion

Four studies of the relation between the facets of extraversion and neuroticism and life satisfaction indicated that the depression facet of neuroticism and the Positive emotions/cheerfulness facet of extraversion were the most consistent predictors of life satisfaction. These two facets explained unique variance in life satisfaction in all seven analyses with self reports with four independent samples. The depression facet was also a significant predictor of unique variance in informant reports of life satisfaction in both studies that included informant reports of life satisfaction. Positive emotions contributed to the prediction of informant

reports in one of two studies. Study 3 replicated the finding with peer reports of depression and positive emotions, although parent reports of personality failed to replicate the same pattern. All but one analyses (parent reports in Study 3) showed that depression and positive emotions/cheerfulness explained unique variance in life satisfaction above and beyond extraversion and neuroticism and only one analyses (self-reported personality in Study 3) showed that extraversion and neuroticism predicted variance in life satisfaction that was not predicted by depression and positive emotions/cheerfulness. These findings suggest that depression and positive emotions/cheerfulness are necessary and sufficient to maximize the prediction of life satisfaction from personality traits. The first two studies suggested that these two facets account for half of the method-invariant variance in life satisfaction.

#### *Implications of the Findings for the Assessment of Personality in SWB Research*

The present findings have implications for the assessment of personality in future studies of SWB. Many contemporary personality studies use a Big Five questionnaire to assess personality. The present results suggest that this approach is not very economical. A comprehensive assessment of the Big Five that also provides a reliable assessment of facets requires more than 200 items. As demonstrated only 16 NEO-PI-R or 20 IPIP items are needed to assess the influence of personality on life satisfaction. By focusing on the most important facets, researchers can increase predictive validity with 10% of the items. Even compared to a short measure of the Big Five, assessing depression and positive emotions is more economical and increases explained variance. Hence, one main contribution of this study is the demonstration that two of the Lean Thirty personality dimensions are sufficient to capture the influence of personality traits on life satisfaction.

*Implications of the Findings for Theories of SWB*

Our findings also help to refine theories of personality influences on life satisfaction. neuroticism and especially extraversion are broad personality traits that incorporate several more specific personality traits. The present findings suggest that SWB researchers should focus on the affective facets of extraversion and neuroticism. In contrast, assertiveness and sociability do not add to the prediction of life satisfaction. Hence, research that examines the biological and environmental factors that lead to a more cheerful temperament are more likely to contribute to the understanding of personality influences on life satisfaction than studies that examine the causes of assertiveness. Similarly, our results suggest that the extensive literature on depression provides more useful information for theories of life satisfaction than the equally vast literature on anxiety or aggression. For example, the strong influence of depression rather than anxiety and vulnerability suggests that a lack of meaning is more detrimental to life satisfaction than stress and worries.

One concern regarding our findings may be that our results are self evident and do not represent an empirical fact. Accordingly, life satisfaction by definition implies a cheerful personality disposition and the absence of depression. We believe that this is not a valid criticism. Many important empirical findings can be intuitively obvious. For example, it was probably not very surprising to find universal sex differences in mate preferences (Buss, 1989), but this finding is nevertheless an important empirical finding. Similarly, our findings may be intuitively obvious, but they present an empirical fact. Participants could have used any type of information that they wanted to judge life satisfaction. The fact that these judgments were predicted by depression rather than anxiety and by positive emotions rather than assertiveness constitutes an empirical fact about the nature of personality influences on life satisfaction. Even if we concede that the significant

contribution of depression and Positive emotions/cheerfulness is obvious, it is also noteworthy that other personality failed to explain additional variance in life satisfaction. Wouldn't our intuitions predict that somebody who is disposed to experience more depression, anxiety, and anger has lower life satisfaction than somebody who is only disposed to experience more depression? Contrary to this seemingly obvious prediction, we found that anxiety and anger did not contribute to life satisfaction after controlling for their association with depression.

### *Implications for Gender Differences in Subjective Well -Being*

Gender differences in personality and life satisfaction provide a concrete example of the importance of our theoretical refinement. Numerous studies have demonstrated universal sex differences in neuroticism (Costa, Terracciano, & McCrae, 2001). Given the strong influence of neuroticism on life satisfaction one would expect that women have lower life satisfaction than men. Contrary to this prediction, studies of life satisfaction consistently fail to show gender differences (Diener et al., 1999). One explanation for this finding could be that women score higher in extraversion to compensate for the higher levels of neuroticism. However, women are not more extraverted than men (Costa et al., 2001). Hence, personality theories that postulate influences of extraversion and neuroticism on life satisfaction cannot explain why women have the same level of life satisfaction as men.

Our finding that life satisfaction is influenced by depression and positive emotions/cheerfulness rather than neuroticism and extraversion provides a simple solution to this problem. An extensive cross-cultural study of gender differences in the facets of extraversion and neuroticism showed that women score slightly higher on the depression facet ( $d = .23$ ) and the positive emotions facet ( $d = .24$ ) than men (Costa et al., 2001). Given the similar magnitude of these effects and the opposing effects of depression and positive emotions on life satisfaction, the two effects

cancel each other out. Hence, the absence of gender differences in life satisfaction is consistent with the evidence regarding gender differences in the facets of extraversion and neuroticism that predict life satisfaction.

#### *Clarification: Personality as a Moderator*

The present studies examined direct, linear effects of personality traits on life satisfaction. We demonstrated that only two dimensions produce reliable direct effects on life satisfaction. However, it is possible that other personality dimensions influence life satisfaction indirectly and in interaction with situational factors. For example, several studies, including the present studies, demonstrated that excitement seeking is not correlated with life satisfaction (Oishi et al., 2001). However, Oishi et al. (2001) demonstrated that excitement seeking interacts with situational factors in the prediction of life satisfaction. Excitement seekers had higher levels of life satisfaction on an exciting day and lower levels of life satisfaction on a boring day. It is likely that many other personality dimensions interact with situational factors in the prediction of life satisfaction. Such interaction effects are important for a complete understanding of personality effects on life satisfaction. However, the direct effects of depression and positive emotions/cheerfulness are particularly important because they influence people's well being across a wide range of situations (Diener & Larsen, 1984).

#### *Limitations*

One limitation of our studies is the composition of our samples. All studies relied on undergraduate students in North America. Schimmack, Radhakrishnan et al. (2002) found that extraversion and neuroticism were weaker predictors of life satisfaction in less individualistic cultures. Hence, it is possible that other personality traits are more important predictors in other populations and in different cultures. We hope that our initiative of looking at facets encourages future researches in different cultures to examine this issue. Finding different personality

predictors of life satisfaction in other populations would not undermine the present findings. Rather it would provide further evidence that culture moderates the relation between personality traits and life satisfaction.

Another limitation is our assessment of life satisfaction with one measure, the SWLS (Diener et al., 1985). Different results could have emerged with another measure of life satisfaction. However, there are several reasons to believe that the present findings generalize to other measures of life satisfaction. First, different life satisfaction measures are highly correlated with each other (Andrews & Withey, 1976). Second, the SWLS is a five-item scale, which increases the generalizability to other life satisfaction measures. Third, the SWLS has high face validity (“I am satisfied with my life.”). Hence, it is difficult to imagine how another measure could assess life satisfaction and not show the same correlations with personality traits as the SWLS.

A related concern is the level of abstraction of our life satisfaction measure. It is well known that global traits like extraversion are better predictors of global outcomes, whereas specific traits like the depression and cheerfulness facets are better predictors of specific outcomes (Ahadi & Diener, 1993). Maybe a broader measure of life satisfaction would be more strongly related to extraversion and neuroticism than to depression and cheerfulness. However, we already used the most abstract and global measure of life satisfaction possible. The SWLS does not constrain what information respondents’ use to evaluate their life satisfaction. Hence, it is even more impressive that global life satisfaction is more highly related to specific measures of personality rather than global dimensions of personality.

Another concern could be the influence of social desirability. However, it is unlikely that social desirability influenced our results. First, social desirability has a negligible influence on anonymous ratings in personality research (Borkenau & Ostendorf, 1992; McCrae & Costa, 1983; McCrae, Stone, Fagan, & Costa, 1998).

Second, the use of multiple methods in studies 1 and 3 further reduces the threat that social desirable responding influenced our results.

It also has to be noted that our results were not entirely consistent across studies. Future research needs to examine whether these inconsistencies are due to sampling error or represent meaningful variations. However, there is one important consistent finding across all studies. Researchers can predict as much variance in life satisfaction from the Big Five measures, based on 240 or 300 items as they can predict from the depression and cheerfulness facets, based on 16 or 20 items. Often the two facets also predict additional variance that is lost by aggregating facets into global factors.

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Table 1

Simple correlations between personality traits and life satisfaction.

Personality Traits	SWLS			
	T1	T2	T3	Informant
Neuroticism	-.45*	-.50*	-.44*	-.29*
Anxiety	-.22*	-.25*	-.21*	-.08
Angry/Hostility	-.34*	-.40*	-.35*	-.22*
Depression	-.52*	-.52*	-.49*	-.38*
Self-Consciousness	-.35*	-.38*	-.37*	-.22*
Impulsivity	-.19*	-.23*	-.16	-.12
Vulnerability	-.31*	-.33*	-.30*	-.21*
Extraversion	.33*	.27*	.29*	.31*
Warmth	.27*	.25*	.25*	.28*
Gregariousness	.26*	.19*	.28*	.27*
Assertiveness	.21*	.12	.11	.20*
Activity	.23*	.16	.19*	.24*
Excitement Seeking	-.03	-.04	.01	-.01
Positive emotions	.40*	.41*	.38*	.28*

\*  $p < .05$

Table 2

Incremental explained variance in stepwise regression analysis.

Step/Predictor	$\Delta R^2$
Self-Report T1	
1. Depression	.27
2. Positive Emotions	.05
Self-Report T2	
1. Depression	.26
2. Positive Emotions	.08
3. Excitement Seeking	.02
Self-Report T3	
1. Depression	.24
2. Positive Emotions	.04
Informant Reports	
1. Depression	.14
2. Warmth	.04

Table 3

Incremental changes in explained variance in a stepwise regression analysis with global and specific predictors.

Step/Predictors	SWLS			
	T1 $\Delta R^2$	T2 $\Delta R^2$	T3 $\Delta R^2$	Inf. $\Delta R^2$
1. Neuroticism & Extraversion	.24*	.26*	.22*	.13*
2. Depression & Positive Emotions	.08*	.09*	.07*	.05*
1. Depression & Cheerfulness	.32*	.33*	.29*	.17*
2. Neuroticism & Extraversion	.00	.02	.00	.02

Note.  $\Delta R^2$  = change in explained variance; significance tested by partial F tests.

\*  $p < .05$

Table 4

Simple and partial correlations with other Big Five dimensions.

Personality Traits	SWLS			
	T1	T2	T3	Informant
<u>Simple correlations</u>				
Openness	.16	.05	.07	-.04
Agreeableness	.14	.17*	.15	.06
Conscientiousness	.25*	.20*	.16	.28*
<u>Partial correlations</u>				
Openness	.02	-.13	-.08	-.16
Agreeableness	.03	.06	.05	-.03
Conscientiousness	.07	.01	-.03	.16

Note. Depression and Positive emotions were the covariates in the partial correlations.

\*  $p < .05$

Table 5

Simple correlations between personality traits and life satisfaction.

Personality Traits	SWLS		
	T1	T2	Informant
Neuroticism	-.49*	-.43*	-.26*
Anxiety	-.40*	-.31*	-.15
Anger	-.38*	-.35*	-.21*
Depression	-.57*	-.55*	-.37*
Self-Consciousness	-.35*	-.32*	-.24*
Immoderation	-.23*	-.16	-.04
Vulnerability	-.38*	-.28*	-.19*
Extraversion	.42*	.35*	.30*
Friendliness	.43*	.37*	.33*
Gregariousness	.21*	.16	.18*
Assertiveness	.36*	.33*	.25*
Activity Level	.17	.14	.06
Excitement Seeking	.11	.03	.09
Cheerfulness	.51*	.46*	.32*

\*  $p < .05$

Table 6

Incremental explained variance in stepwise regression analysis.

Step/Predictor	$\Delta R^2$
Self-Report T1	
1. Depression	.32
2. Cheerfulness	.07
Self-Report T2	
1. Depression	.30
2. Cheerfulness	.04
Informant Reports	
1. Depression	.13
2. Cheerfulness	.03

Table 7

Changes in Explained Variance in a Hierarchical Regression Analysis with Global and Specific Predictors.

Step / Predictors	SWLS		
	T1 $\Delta R^2$	T2 $\Delta R^2$	Inf. $\Delta R^2$
1. Neuroticism & Extraversion	.28*	.20*	.10*
2. Depression & Cheerfulness	.11*	.15*	.06*
1. Depression & Cheerfulness	.39*	.35*	.16*
2. Neuroticism & Extraversion	.00	.01	.01

Note.  $\Delta R^2$  = change in explained variance; significance tested by partial F tests.

\*  $p < .05$

Table 8

Simple and partial correlations with other Big Five dimensions.

Personality Traits	SWLS		
	T1	T2	Informant
<u>Simple correlations</u>			
Openness	.18	.22*	-.07
Agreeableness	.14	.19*	.00
Conscientiousness	.35*	.33*	.14
<u>Partial correlations</u>			
Openness	-.04	.06	-.25*
Agreeableness	.03	.12	-.09
Conscientiousness	.13	.11	-.04

Note. Depression and cheerfulness were the covariates in the partial correlations.\*  $p < .05$

Table 9

Simple correlations between personality ratings by self, peers, and parents with life satisfaction.

	Self	Peers	Parents
Personality Traits	N=143	N=129	N=108
Neuroticism	-.48*	-.23*	-.27*
Anxiety	-.33*	-.16	-.23*
Anger/Hostility	-.31*	-.10	-.17
Depression	-.52*	-.28*	-.18
Self-Consciousness	-.40*	-.22*	-.28*
Impulsivity	-.03	-.13	-.10
Vulnerability	-.47*	-.18*	-.22*
Extraversion	.42*	.33*	.24*
Warmth	.25*	.25*	.14
Gregariousness	.31*	.26*	.21*
Assertiveness	.35*	.20*	.36*
Activity	.08	.15	.11
Excitement Seeking	.22*	.15	-.05
Positive emotions	.41*	.37*	.27*

Table 10

Incremental explained variance in stepwise regression analysis.

Step/Predictor	$\Delta R^2$
Self-Report	
1. Depression	.27
2. Positive Emotions	.08
3. Vulnerability	.04
Peer-Report	
1. Positive Emotions	.14
2. Depression	.04
Parent Reports	
1. Assertiveness	.13
2. Anger/Hostility	.03

Table 11

Changes in explained variance in a hierarchical regression analysis with global and specific predictors.

Predictors	Self $\Delta R^2$	Peers $\Delta R^2$	Parents $\Delta R^2$
1. Neuroticism & Extraversion	.35*	.14*	.10*
2. Depression & Positive Emotions	.04*	.05*	.02
1. Depression & Positive Emotions	.35*	.18*	.09*
2. Neuroticism & Extraversion	.04*	.00	.03

Note.  $\Delta R^2$  = change in explained variance; significance tested by partial F tests.

\*  $p < .05$

Table 12

Simple correlations between personality and life satisfaction (Study 4)

Personality (N = 344)	SWLS
Neuroticism	-.30*
Depression	-.39*
Extraversion	.24*
Positive emotions	.36*
Openness	.17*
Agreeableness	.17*
Conscientiousness	.07

\*  $p < .05$

Table 13

Changes in explained variance in a hierarchical regression analysis with global and specific predictors (Study 4).

Step/Predictors	SWLS
1. Neuroticism & Extraversion	.12*
2. Depression & Cheerfulness	.08*
1. Depression & Cheerfulness	.20*
2. Neuroticism & Extraversion	.00

Note.  $\Delta R^2$  = change in explained variance; significance tested by partial F tests.

\*  $p < .05$