

# Refining the Relationship Between Personality and Subjective Well-Being

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Understanding subjective well-being (SWB) has historically been a core human endeavor and presently spans fields from management to mental health. Previous meta-analyses have indicated that personality traits are one of the best predictors. Still, these past results indicate only a moderate relationship, weaker than suggested by several lines of reasoning. This may be because of *commensurability*, where researchers have grouped together substantively disparate measures in their analyses. In this article, the authors review and address this problem directly, focusing on individual measures of personality (e.g., the Neuroticism-Extroversion-Openness Personality Inventory; P. T. Costa & R. R. McCrae, 1992) and categories of SWB (e.g., life satisfaction). In addition, the authors take a multivariate approach, assessing how much variance personality traits account for individually as well as together. Results indicate that different personality and SWB scales can be substantively different and that the relationship between the two is typically much larger (e.g., 4 times) than previous meta-analyses have indicated. Total SWB variance accounted for by personality can reach as high as 39% or 63% disattenuated. These results also speak to meta-analyses in general and the need to account for scale differences once a sufficient research base has been generated.

*Keywords:* personality, subjective well-being, meta-analysis, commensurability

Subjective well-being (SWB) is a fundamental human concern. Since at least the sixth century B.C., the Classic Greeks explored the issue under the rubric of *eudaemonia*, that is human flourishing or living well. This followed with the Hellenistic Greeks and the Romans exploring *ataraxia*, a form of happiness within one's own control (Leahey, 2000). Similarly, interest in SWB has continued to the present day, also under a variety of terms and methodologies (e.g., Diener, Eunkook, Lucas, & Smith, 1999; Lyubomirsky, Sheldon, & Schkade, 2005). More recently, the study of SWB has focused on its relationship to personality, and sufficient research has been conducted to permit several meta-analyses (Ozer & Benet-Martínez, 2006). In particular, DeNeve and Cooper's (1998) work, which summarizes the correlations of SWB with 137 traits, has been cited close to 200 times in fields ranging from economics (Frey & Stutzer, 2002) to gerontology (Isaacowitz & Smith, 2003). They have shown that personality is one of the foremost predictors of SWB, which underscores the importance of using personality to understand happiness. The focus of the current meta-analysis is to build on this innovative research base by reexamining the role personality has with SWB.

The major reason for this reanalysis is twofold. First, there has been an explosion of interest in "positive psychology" in the new millennia (e.g., Seligman & Csikszentmihalyi, 2000), generating considerably more data since DeNeve and Cooper (1998) conducted their study. For example, their earlier investigation of the personality trait Psychoticism's relationship with SWB was based on five samples, whereas we were able to obtain over 43 samples for the present meta-analysis. This allowed us to refine our estimates to a much greater degree. Second and more importantly, despite the frequent citations of DeNeve and Cooper's meta-analysis, as well as other summaries indicating that personality is one of the strongest predictors of SWB, the previously established associations are still weaker than expected. As DeNeve and Cooper reported, "on average, personality variables were associated with [only] 4% of the variance for all indices of SWB" (p. 221). Specifically, the correlations of overall SWB with the Big Five traits are as follows: .17 (Extraversion), .17 (Agreeableness), .21 (Conscientiousness), -.22 (Neuroticism), and .11 (Openness to Experience). We argue that these results are substantially smaller than those that would be expected from theoretical analyses and empirical studies, especially with regards to Extraversion, which should be considerably stronger than Agreeableness and Conscientiousness.

We begin by considering four major reasons that the personality-SWB relationship should be particularly strong. After this, we review how the relationship between SWB and personality could be better assessed. Because of the recent proliferation of SWB research, several improvements to the meta-analytic procedure are now available. To begin with, previous research was primarily univariate, examining the relationship of individual traits with SWB. We examine the multivariate impact of all major personality traits simultaneously. More important, we review how past meta-analyses aggregated dissimilar operational definitions of

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We would like to thank the International Well-Being Group as well as Richard Lucas, Robert Cummins, and Ruut Veenhoven specifically for providing commentary and encouragement on a draft of this article.

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personality and SWB constructs, likely affecting the summary estimates. We argue that a multivariate analytic approach that controls for measurement differences should yield the most appropriate and accurate meta-analytic effect sizes.

### Why the SWB–Personality Relationship Is Likely Underestimated

In the following sections, we review four arguments that suggest a far greater connection between SWB and personality than what is presently found. We first note that there are strong theoretical linkages between personality and SWB. Second, at a definitional or conceptual level, there are impressive similarities between specific personality traits and SWB components. Third, we examine research regarding genetic determinants of SWB. This literature indicates that long-term SWB is largely determined by personality traits. Fourth, we note that the situational strength does not affect the results as would be expected. In particular, life satisfaction should be more closely connected to SWB than job satisfaction; however, the opposite effect has been observed.

#### *Theoretical Linkages*

There are a wide variety of theoretical linkages between personality traits and SWB, prompting Diener and Lucas (1999) to conclude, “it appears a substantial portion of stable SWB is due to personality” (p. 214). To briefly review, we focus on the major direct and indirect paths, also known as the temperamental, internal or top-down, and instrumental, external or bottom-up perspectives (Diener & Emmons, 1984; McCrae & Costa, 1991). At a direct level, we can determine whether SWB and personality are related by showing that they involve common biological mechanisms or neural substrates. At the indirect level, we can determine whether behaviors indicative of personality traits are also seen to create SWB.

Though there are several theories that indicate personality has biological components (e.g., Cloninger, Svrakic, & Przbeck, 1993; H. J. Eysenck, 1967), Gray’s (1987) reinforcement sensitivity theory is particularly relevant. It indicates that two systems, a behavioral activation system (BAS) and a behavioral inhibition system (BIS), are connected to both personality and SWB (Elliot & Thrash, 2002). The BAS is linked to *Extraversion* and regulates approach behavior by signaling the presence of rewards through the promotion of *positive affect*. The BIS is linked to *Neuroticism* and regulates avoidance behavior by signaling the presence of punishers through the promotion of *negative affect*. Consequently, extraverts are more likely to attend to rewards and find them more positive, whereas neurotic individuals are more likely to attend to punishers and find them more negative.

Though there is evidence to support Gray’s (1987) theory, much of it has been relatively circumstantial and not entirely definitive. For example, there is some evidence to suggest that personality traits are related to mood induction and that extraverts attend more to rewards (Carver, 2004; Matthews & Gilliland, 1999; Smits & Boeck, 2006). However, in recent years, considerable advances have been made in the psychobiology of both SWB and personality. We can now make a much more direct argument demonstrating that the two constructs share common physical underpinnings.

Of particular note is a pair of meta-analyses, one which directly connects the neurotransmitter serotonin to the Neuroticism scale of the Neuroticism-Extraversion-Openness Personality Inventory (NEO; Costa & McCrae, 1992; Schnika, Busch, & Robichaux-Keene, 2004) and the other that connects it to depression and affective disorders (Lasky-Su, Faraone, Glatt, & Tsuang, 2005). Similarly, Depue and Collins (1999) reviewed considerable evidence that dopamine is involved in Extraversion, whereas Rolls (2000) reviewed how it facilitates the experience of rewards (see also Pickering & Gray, 2001). Additional parallels can be drawn using Davidson’s (2005) recent review of neural substrates of well-being. Davidson proposed that the amygdala, the prefrontal cortex, the hippocampus, and the anterior cingulate cortex can explain well-being and affective style, and others have used these same mechanisms to explain personality, in particular Extraversion (Cloninger, 2000; Depue & Collins, 1999). All in all, the overlap is considerable (Zuckerman, 2005).

Moving to indirect mechanisms, personality may help create life events that influence SWB. The most replicated finding in this area is the link between Sociability, a facet of Extraversion, and positive affect (Eid, Riemann, Angleitner, & Borkenau, 2003). This link can operate in two fashions. First, people tend to be happier in social situations (Pavot, Diener, & Fujita, 1990), and because extraverts spend more time socially (Watson, Clark, McIntyre, & Hamaker, 1992), they should be happier. Second, Extraversion generally has a positive impact on peer, family, and romantic relationships, whereas Neuroticism is often a negative predictor (C. Anderson, John, Keltner, & Kring, 2001; Belsky, Jaffee, Caspi, Moffit, & Silva, 2003; Donnellan, Larsen-Rife, & Conger, 2005; Watson, Hubbard, & Wiese, 2000a). Consequently, it has been suggested that extraverts have more fulfilling social interactions, which also leads to greater levels of happiness (Argyle & Lu, 1990a; Hills, Argyle, & Reeves, 2000).

Other research has gone beyond personal relationships. In particular, the personality trait of Impulsiveness/Conscientiousness is related to delay of gratification, with impulsive people choosing the smaller short-term gain only to suffer the larger long-term pain. Consequently, it is associated with a host of harms, ranging from procrastination (Steel, 2007) to poor health (Bogg & Roberts, 2004) to financial debt (Angeletos, Laibson, Repetto, Tobacman, & Weinberg, 2001; Versplanken & Herabadi, 2001). Similarly, Extraversion predisposes people to experience more positive life events, whereas Neuroticism predisposes people to experience more negative life events (Headey & Wearing, 1989; Magnus, Diener, Fujita, & Pavot, 1993). Finally, Ozer and Benet-Martínez (2006) noted that personality predicts a wide variety of other SWB-relevant behaviors and outcomes, including occupational choice, achievement, and community involvement.

#### *Construct Similarities*

One basic reason why the relationship between personality and SWB should be much stronger is that the two constructs are very similar. In particular, Neuroticism and Extraversion are nearly identical to two elements of SWB, negative and positive affect, respectively. Neurotic individuals tend to be anxious, easily upset, and moody or depressed, whereas extraverts tend to be sociable, optimistic, outgoing, energetic, expressive, active, assertive, and exciting. As Yik and Russell (2001) noted, many of these very

terms used to describe Neuroticism and Extraversion appear in measures of negative and positive affect, and “even when the terms are not exactly the same, similar ideas are found on both the personality and affect scales” (p. 251).

Further underscoring their similarity, Watson and Clark (1992) found that negative affect facets load onto the same factor as Neuroticism and, as their later work has indicated, that positive affect is at the center of the broad trait of Extraversion (Watson & Clark, 1997). Other empirical studies support that the constructs overlap considerably (e.g., Lucas & Fujita, 2000; Suh, Diener, & Fujita, 1996). For example, Burger and Caldwell (2000) noted that “the results from several investigations indicate that the PANAS [Positive and Negative Affect Schedule] trait positive affect scale and the NEO Extraversion appear to be measure highly overlapping, if not the same, constructs” (p. 54). It is not surprising, then, that Tellegen and Waller (1992) have gone so far as to suggest that Neuroticism should be relabeled negative affect, whereas Extraversion should be relabeled positive affect.

Given this extreme conceptual overlap, we would expect correlations much higher than what is presently reported (John & Srivastava, 1999). For example, the NEO has six facet scales for Extraversion. If just one facet, Positive Emotions, is basically identical to SWB and correlates with it at .70, it alone should cause the entire Extraversion scale to correlate with SWB at .45, accounting for 20% of the variance. DeNeve and Cooper (1998) actually did test for the effects of conceptual overlap by specifically examining affective variables that “can be considered as types of SWB” (p. 216). Given the past exposition, we expect that these SWB/affective personality variables would show higher correlations with other measures of SWB. What is surprising is that DeNeve and Cooper reported the opposite, “that the affectivity variables obtained a significantly weaker association with SWB” (p. 216). These results are strongly counterintuitive and further suggest that this topic could benefit from further meta-analytic reexamination.

Finally, it must be stressed that conceptual overlap between SWB and personality traits should not be dismissed as simple criterion contamination. Criterion contamination is a form of common method variance where the predictor and criterion both share a few very similar items, making at least some relationship between them certain (e.g., Pincus & Callahan, 1993). However, some overlap is inevitable because the five-factor model is based on the statistical technique of factor analysis. By design, this profoundly atheoretical procedure will draw any individual difference that shows strong correlations with other personality variables into the factor dimensions (Block, 2001). Thus, conceptual overlap does not so much create correlations with personality traits as reflect legitimate relationships. For example, we suggest that the Positive Emotion facet from the NEO Extraversion scale likely reflects SWB, possibly generating sizeable SWB correlations purely because of criterion contamination. However, factor analysis ensures that Positive Emotions correlates well with the other Extraversion facets (e.g., Activity, Gregariousness, Assertiveness). Necessarily then, the non-SWB Extraversion facets must correlate well with SWB because SWB is akin to Positive Emotions (i.e., transitive property). We can assess this using the facet intercorrelations provided in the *NEO Professional Manual* (Costa & McCrae, 1992). If we predicted Positive Emotion from just these other non-SWB Extraversion facets, essentially eliminating the issue of

criterion contamination, the regression equation would account for 42% of the variance. Notably, this figure is much larger than the 20% of the variance that construct overlap alone would suggest.

Consequently, the strength and nature of personality’s relationship with SWB are relevant. A strong association supports hypothesized direct and indirect relationships, such as common biological sources (e.g., dopamine) or tight causal relationships between trait behaviors or attitudes (e.g., gregariousness) and SWB. Also, a strong personality relationship with SWB reinforces that SWB is also largely stable, which itself is significant. This issue of SWB stability is addressed more directly in the next section.

### *Stability and Heritability of SWB*

As Lyubomirsky et al. (2005) have reviewed, there appears to be a happiness “set point,” that is, SWB over the long-term tends to be stable. Adoption and twin research studies by Lykken and Tellegen (1996) and more recently by Nes, Røysamb, Tambs, Harris, and Reichborn-Kjennerud (2006) have indicated that genes account for about 80% of this stability. Environmental influences are still important, but they primarily affect only present mood, having little lasting impact in the long term. After excluding other individual characteristics, such as demographics, the predominant conclusion is that “it appears a substantial portion of stable SWB is due to personality” (Diener & Lucas, 1999, p. 214). Similarly, Lyubomirsky et al. (2005) noted “the set point probably reflects relatively immutable intrapersonal, temperamental, and affective personality traits, such as extraversion, arousability, and negative affectivity, that are rooted in neurobiology” (p. 117). Also, Nes et al. (2006) indicated that the long-term stability of SWB may “reflect stable and heritable personality traits, such as neuroticism and extraversion” (pp. 1038–1039). Finally, Eid et al. (2003), on the basis of their own twin research study, concluded “that it is reasonable to consider sociability, energy, and positive affect as different facets of one multidimensional personality trait called extraversion or positive emotionality” (p. 338).

Given that genes appear to account for 80% of the variance in long-term SWB and that these genes appear to be primarily expressed in terms of personality traits, the expected correlation between traits and SWB should be much higher than DeNeve and Cooper (1998) reported. Consider Ilies and Judge’s (2003) research, which estimates up to 45% of genetic influences on job satisfaction, an element of overall SWB, are expressed through personality traits. As the subsequent section on situational strength indicates, we would expect that traits mediate even more of the relationship between genes and long-term SWB than it does for genes and job satisfaction. Still, if about half of the genetic sources of long-term SWB can also be attributed to major personality traits, we then we would expect to see individual correlations approaching at least .50.

### *Situational Strength and SWB*

Though long-term SWB is largely determined by genetic influences, the environment may at times mediate the relationship. Also described as “nature via nurture,” this instrumental perspective suggests an indirect link between traits and SWB in which individuals who possess high levels of Extraversion or low levels of Neuroticism are more likely to position themselves in positive life

situations (McCrae & Costa, 1991). For example, extraverts are genetically disposed to have more energy, which in turn may help them engage in recreational activities that produce pleasure. Consequently, constrained environments that preclude or reduce situational choice should diminish the personality–SWB relationship. More generally, the phenomenon is known as *situational strength*, which indicates the degree that the environment, rather than dispositions, influences a person’s attitudes and behaviors (Mischel, 1977; Withey, Gellatly, & Annett, 2005).

Given the concept of situational strength, previous meta-analytic SWB research results are counterintuitive. It has indicated that job satisfaction (Judge, Heller, & Mount, 2002) is better predicted by personality traits than general levels of SWB (DeNeve & Cooper, 1998). For the Big Five personality traits, all except for Openness to Experience correlate more strongly with job satisfaction than overall SWB. We would expect the opposite. As Staw and Cohen-Charash (2005) have reviewed, organizations often represent strong situations, especially in the common circumstance “where the organization controls key outcomes for the individual, such as incomes, status, and social identification” (p. 63). Though the degree of situational strength will vary among organizations, situations within the work context should typically be more powerful relative to most life domains. For example, job satisfaction is more environmentally determined than life or marital satisfaction (Ilies & Judge, 2003; Spotts et al., 2005; Stubbe, Posthuma, Boomsma, & De Geus, 2005). Consequently, situational strength should mitigate the personality–job satisfaction association to a greater degree than personality–SWB relationships.

Other research also indicates that situations should strongly affect job satisfaction. Heller, Watson, and Ilies (2004) conducted research that examined the associations between personality traits and a number of satisfaction domains. The authors initially performed a meta-analysis that investigated the relationship between the Big Five personality constructs and life, health, marital, and social satisfaction. On the basis of their analyses and the previous meta-analysis conducted by Judge, Heller, and Mount (2002), the authors suggested that life satisfaction is more proximally related to personality constructs than other satisfaction domains. Furthermore, Schjoedt, Balkin, and Baron (2005) examined the role of dispositional and situational variables in predicting job satisfaction. Their results have demonstrated that situational variables account for more variance than dispositional variables in job satisfaction.

As such, it appears that job satisfaction is more specific to the situation than other forms of SWB, and previous meta-analytic findings could better portray the relative relationship between personality and job and life satisfaction domains. We should expect that general indices of SWB are more closely linked to personality than what is presently summarized.

### Improving Estimation: The Issue of Commensurability

Given that the SWB–personality relationship appears to be underestimated, we are presently in a position to address this issue. Simply, many more studies are now available. A larger sample will improve the precision of any estimate, but it will also enable other meta-analytic techniques. For example, previous meta-analytic research primarily collected and provided only univariate correlations between SWB and personality traits. By collecting the inter-

correlations among personality elements as well, we can conduct multivariate analyses and determine how much total variance can be accounted for by personality. However, the major benefit of significantly more data is the ability to tackle the *commensurability* or “apples and oranges” problem (e.g., Sharpe, 1997).

Commensurability is a classic difficulty in meta-analysis, reflecting that we often must merge dissimilar studies together to achieve a sufficient sample. This practice creates method variance (Kenny & Zautra, 2001), as inevitably no two studies are truly identical (e.g., even if you limit yourself to “apples” alone, they themselves come in a wide variety ranging from Fuji to Macintosh). Though a strong case can be made for aggregating slightly different studies, at some point the differences no longer remain trivial and become substantive. There is no definite point at which this happens, but when we start grouping extremely diverse studies together, H. J. Eysenck’s (1978) criticism of meta-analysis as “mega-silliness” (p. 517) becomes understandable. Indeed, the effects of commensurability are typically large (Cortina, 2003). For example, meta-analytic research by Doty and Glick (1998) found that 32% of variance in scores was attributed to methods of measurement. Also, as Hunter and Schmidt (1990) concluded, it can create meta-analyses that “are difficult or impossible to interpret” (p. 481).

In exploring this issue, we consider construct variation with personality and SWB separately. For both personality and SWB, we first establish that there is considerable variability regarding how they are measured and that these differences are substantive. Following this, we discuss how past research has only partially dealt with the problems of construct variation.

### *Construct Variation in Personality*

There are a variety of different perspectives in the field of personality, including psychoanalytic and cognitive interpretations. However, the most commonly used and accepted is the five-factor descriptive model. Consistent with previous reviews (e.g., DeNeve & Cooper, 1998; Judge, Bono, Ilies, & Gerhardt, 2002; Judge, Heller, & Mount, 2002), its popularity provides a sufficient research base to permit meta-analytic study. Because the five-factor model is primarily descriptive rather than explanatory, it should not be taken as the definitive lens with which to examine personality. On the other hand, as Funder (2001) stressed, being descriptive should not be taken as a pejorative. Similarly, Mischel (1999) argued that descriptive and explanatory personality perspectives, despite being “increasingly separated and warring” (p. 56) should be viewed as complementary efforts.

Initially, the issue of commensurability does not appear to be a pressing issue when we consider just the five-factor model. For over 20 years, it has been commonly accepted (L. R. Goldberg, 1990; Lee & Ashton, 2004). Even earlier models, such as the three-factor structure seen in the Eysenck Personality Questionnaire (EPQ; H. J. Eysenck & Eysenck, 1975) can be largely understood in terms of five factors. For example, the Psychoticism factor of H. J. Eysenck and Eysenck’s (1975) inventory consists of low levels of Conscientiousness and Agreeableness (Brand, 1997; John, 1990; McCrae & Costa, 1985). Despite these commonalities, many scales possess unique properties, and there are compelling reasons to believe they should only be cautiously aggregated.

Even among personality scales with similar or identical nomenclature, there are substantive differences. For example, the NEO Openness scale correlates with the comparable Hogan Personality Inventory Intellectance scale at .67, whereas the same Hogan Personality Inventory scale correlates with the Interpersonal Adjective Scales–Big 5 Openness scale only at .44 (Widiger & Trull, 1997). Especially problematic, however, to SWB research is the Impulsivity facet and its “wandering” nature (Revelle, 1997). Impulsivity has been nested under Extraversion for the Eysenck Personality Inventory (EPI; H. J. Eysenck & Eysenck, 1964), under Psychoticism for the EPQ, and under Neuroticism for the Neuroticism-Extroversion-Openness Personality Inventory—Revised (NEO-PI-R; Costa & McCrae, 1992). Aluja, García, and García (2004) factor analyzed several personality inventories, including the NEO-PI-R and the Eysenck Personality Questionnaire—Revised (EPQ-R), short form (EPQ-RS). Interestingly, the results suggest that the Impulsiveness scale, a facet of NEO’s Neuroticism dimension, actually had the strongest loadings with the Conscientiousness and Psychoticism dimensions from both the NEO and EPQ inventories respectively. Also, they and others found that the specific measure of impulsivity and the nationality of the sample will strongly influence whether it loads on Neuroticism, Extraversion, or Conscientiousness (Konstabel, Realo, & Kallasmaa, 2002; Whiteside & Lynam, 2001). The concern is that Impulsiveness should be relevant in the prediction of SWB (Emmons & Diener, 1986) and is positively associated with negative affect. Depending on where it is placed then, it has the capacity to affect correlations, such as diminishing the Extraversion relationship with SWB. Consequently, the combination of diverse personality measures has the potential to underestimate correlations in SWB meta-analytic research.

### *Past Practices and Research Implications*

Hogan, Hogan, and Roberts (1996) suggested that combining nonequivalent scales is a major problem that all personality researchers face when conducting meta-analyses. Other researchers agree. Post hoc classification threatens the construct validity of Big Five personality dimensions, simply because there are an extremely large number of traits, many of which do not fit cleanly into the Big Five framework (Hurtz & Donovan, 2000; Salgado, 1997), a framework that itself can be debated (Block, 2001). Consequently, it is very easy to make dubious or mistaken classifications. For example, consider the meta-analysis of the Big Five and job performance conducted by Barrick and Mount (1991), two extremely capable and experienced researchers whose methodology is likely one of the “best case” scenarios. As Hogan et al. (1996) noted, they made a few misclassification errors, and Hurtz and Donovan (2000) raised concerns regarding their rater agreement, as it reached “only 83% or better rater agreement on 68% of the classifications” (p. 872).

Given the challenge in sorting a diverse array of personality measures with no clear guidelines for equivalency, researchers have suggested that the best approach to control for variation in construct validity, and reduce the level of subjective judgments, is to examine evidence associated with a single scale (e.g., Hogan et al., 1996; Hunter & Schmidt, 1990). By doing so, interrater agreement will not be sacrificed, and more importantly, there will be no comparison made between noncommensurate measures. This

methodology was adopted by Lucas and Fujita (2000), who addressed commensurability in a focused SWB meta-analysis, examining the univariate relationship of Extraversion with pleasant affect. They limited their meta-analysis to three popular scales: the NEO (Costa & McCrae, 1992), the EPQ (H. J. Eysenck & Eysenck, 1975), and the EPI (H. J. Eysenck & Eysenck, 1964).

### *Construct Variation in SWB*

SWB is far from a unitary concept, and its definition and measurement can vary greatly across research studies. Diener and Lucas (1999) defined SWB as people’s evaluation of their lives. These evaluations include “both cognitive judgments of ones’ life satisfaction in addition to affective evaluations of mood and emotions” (p. 213). Facets within SWB differ through varying levels of affective, temporal, and cognitive dimensions (Okun, Stock, & Covey, 1982), suggesting that these SWB categories are not entirely equivalent. In particular, several researchers have found significant differences between affect and happiness or satisfaction (Diener & Diener, 1996; Steel & Ones, 2002; Veenhoven, 1994; H. M. Weiss, 2002), and within affect itself there are substantive differences between its positive and negative form (e.g., Arthaud-Day, Rode, Mooney, & Near, 2005; Connolly & Viswesvaran, 2000).

Though the field has yet to come to a consensus regarding the domains of SWB (e.g., happiness is considered at times to represent either affect or satisfaction), a few prominent divisions reoccur with regularity: life satisfaction, happiness, affect (overall, positive and negative), and quality of life. As Kim-Prieto, Diener, Tamir, Scollon, and Diener (2005) have reviewed, none of these conceptions of SWB should be considered definitive, each potentially providing unique and important information. The differences among these four categories will now be discussed.

First, life satisfaction has been defined as the “global evaluation by the person of his or her life” (Pavot, Diener, Colvin, & Sandvik, 1991, p. 150). Consequently, this includes studies that incorporate scales assessing participants’ cognitive appraisal of overall life circumstances. Second, happiness normally refers to a consistent, optimistic mood state that “is itself the highest good, the *summum bonum* of classical theory” (Averill & More, 1993, p. 617). Third, positive and negative affect are measures that gauge the propensity for an individual to assess life events in either a positive or a negative manner, respectively. Overall affect or hedonic balance examines the equilibrium between positive and negative affect, often operationalized as the difference score between the positive and negative affect scales. Of note, life satisfaction and happiness typically assess SWB over considerable duration, such as a lifetime. Affect, on the other hand, can be assessed at either a state or a trait level. State affect involves emotional experience over a short period in time (e.g., today, this week, this month), whereas trait affect spans across a long duration of time (e.g., years). The fourth SWB category is quality of life. Though there is little consensus regarding the exact meaning of quality of life or how it should be measured, it follows a predictable methodology (K. L. Anderson & Burckhardt, 1999; Felce & Perry, 1995). It is a global measure based on an aggregation of well-being across several life domains (e.g., recreational, social activities, finances), usually assessed using a combination of objective and subjective indicators.

### *Past Practices and Research Implications*

For the most part, researchers have been fairly rigorous in separating different categories of SWB during analysis. DeNeve and Cooper (1998) sorted their measures into four groups: life satisfaction, happiness, positive affect, and negative affect. Similarly, Lucas, Diener, and Suh (1996) categorized SWB measures into four dimensions, which include life satisfaction, optimism, self-esteem, and affect. Thoresen, Kaplan, Barsky, Warren, and de Chermont (2003) focused on affect alone. Finally, Connolly and Viswesvaran (2000) considered both positive and negative affect but evaluated the overall affective disposition as well. However, two problematic issues arise with the classification of SWB.

To begin with, affect is a *bridge* concept, as it can be considered both a personality trait (a predictor) and a measure of SWB (a criterion) simultaneously. This generates a situation in which the focus of many studies is to use affect, one measure of SWB, to predict another (e.g., Connolly & Viswesvaran, 2000; Thoresen et al., 2003). DeNeve and Cooper (1998) dealt with this confusion by considering only state affect as representing SWB. This choice, though, is at odds with life satisfaction, which deals with judgments regarding one's entire life. This means that though we have long-term measures of cognitive SWB, we asymmetrically have no corresponding affective ones. If SWB is our criterion of interest, we should examine both long- and short-term affect using moderator analyses to assess whether personality is differentially related to the two levels.

The second issue directly pertains to commensurability. Researchers have appeared to be fairly inclusive in regards to what is considered SWB. Connolly and Viswesvaran (2000) as well as Thoresen et al. (2003) used a wide variety of measures to describe affect: from anxiety (e.g., State-Trait Anxiety Inventory; Spielberger, Gorsuch, & Lushene, 1970) and optimism (e.g., Life Orientation Test; Scheier & Carver, 1985) to Extraversion and Neuroticism (e.g., the EPQ). Similarly, H. M. Weiss (2002) concluded that the job satisfaction literature has not been careful in differentiating between cognitive and affective forms of SWB, meaning that it can be very difficult to determine whether to group different measures together.

### The Present Meta-Analysis

To better examine personality's relationship with SWB, we controlled scale differences during our meta-analysis. For the personality measures, we independently derived an identical approach to commensurability as Lucas and Fujita (2000), focusing our meta-analysis also on the NEO, the EPQ, and the EPI. They are popular enough to provide sufficient sample for summary and reflect what Hogan et al. (1996) described as "good personality measures" (p. 470). They provide scores that are temporally stable and relate to meaningful nontest behaviors (e.g., Kirkhart, Morgan, & Sincavage, 1991; Murray, Rawlings, Allen, & Trinder, 2003). Furthermore, the measures have favorable psychometric properties. For instance, internal-consistency reliabilities for the scales are typically around .80 (e.g., Costa & McCrae, 1992; S. B. G. Eysenck, Eysenck, & Barrett, 1985; John, Donahue, & Kentle, 1991).

Also, we included the Defensiveness scale of the EPQ in our meta-analysis. Also known as Social Desirability or the Lie scale,

the intent of this scale is to detect faking of respondents when completing the EPQ. Findings suggest that the Defensiveness scale is related to real individual differences, including Neuroticism and Conscientiousness (Ones, Viswesvaran, & Reiss, 1996), and arguments have been made to include social desirability as a measure of personality (see Furnham, 1986; McCrae & Costa, 1983).

For the SWB measures, the same degree of consensus was not available. Consequently, we could not focus on single measures as we did for personality. Instead, we attempted to reduce commensurability problems by broadening the number of SWB categories as compared with previous research. We considered life satisfaction, happiness, affect (overall, positive and negative), and quality of life. Furthermore, as we discuss in the following Method section, we excluded SWB measures that were not unanimously sorted into the same category by the coders.

Analyzing this data, we formally tested our central hypothesis, that our findings are statistically stronger than DeNeve and Cooper's (1998) findings. After this, we examined the consistency of these results by examining demographic variables (i.e., age, gender), confirming that they have minor moderating effects at best (Ozer & Benet-Martínez, 2006). To assess the commensurability among our measures, we tested between as well as within differences. For between, we determined whether the NEO, EPQ, and EPI all had the same relationship with SWB. For within, we determined whether there were detectable differences among versions of the same personality scales as well as state versus trait effects for affect. Finally, we assessed common method variance, that is the extent to which our results can be attributed to methodology rather than relationships among the underlying constructs.

## Method

### *Literature Search*

Our literature search procedure was designed to include all relevant articles on the topic, including foreign language and unpublished works. The first strategy was to conduct searches in the PsycInfo, Medline, and Proquest (unpublished dissertations) databases using keywords for articles that included both SWB and personality measures. Searches combined 36 keywords related to happiness, life satisfaction, affect, or quality of life with 15 keywords related to either the EPI or the NEO. The personality keywords included NEO Personality Inventory, NEO personality, NEO Five-Factor Inventory, NEO-FFI, NEO-PI, NEO-PI-R, Eysenck Personality Inventory, Eysenck Personality Questionnaire, EPI, EPQ, EPQ-J, EPQ-R-S, and EPQ-R-X. Second, the Social Sciences Citation Index (i.e., Web of Science) was searched for all publications that cited articles providing various measures of the above listed keywords. Meta-analyses (e.g., DeNeve & Cooper, 1998; Judge, Heller, and Mount, 2002; Steel & Ones, 2002) and websites (e.g., World Database of Happiness) were examined to identify many of the major measures. In total, the citations of more than 80 articles were searched. Third, authors who published more than one study within our initial search were contacted to secure any unpublished research in attempt to address the "file drawer" problem. In total, 1,177 published articles, master's and doctoral dissertations, book chapters, and conference proceedings have been identified in various languages. We included six different revised NEO measures, in part to accommo-

date language translations between 1985 and 1992. There were ten different EPQ scales, mostly from translations into various languages. Lastly, there were four EPI measures.

### *Eligibility Criteria and Data Coding Procedures*

Of the 1,177 identified articles, 249 contained potentially usable data. Usable data included effect sizes expressed as a correlation, *t* score, *d* score, or *F* score. All articles were double coded by two authors (Piers Steel, Joseph Schmidt, or Jonas Shultz), and all entered correlations were compared to identify and correct any data entry errors. The interrater reliability of the coding was 96.4%. Any inconsistencies were resolved by reexamining the articles. SWB scales were sorted on the basis of the input of all three authors (Piers Steel, Joseph Schmidt, and Jonas Shultz), excluding anywhere clear consensus could not be achieved. Affect was considered to be measured at a state level if the time period was 1 month or less. Table 1 depicts the major scales associated with each category. However, between 14 and 19 scales were identified measuring each construct of SWB.

Outliers were defined as individual correlations that were four standard deviations above or below the mean of the correlations in the sample (as per Huffcutt & Arthur, 1995). The existence of outliers was addressed by further examining the original article to ensure that data entry errors did not occur. If the outlier did not result from an entry error, we reduced its impact (as per Tabachnick & Fidell, 1989). The sample size of the outlying correlation was reduced until it was not significant (i.e., below four standard

deviations from the mean). If the sample had to be reduced to 300, smaller than the average sample size, it was removed from the analysis. Any other discrepancies were resolved via a consultation process that included all three authors (Piers Steel, Joseph Schmidt, and Jonas Shultz).

Interestingly enough, the issues of commensurability still extends to our specific personality scales, which come in several varieties as the literature search indicates. For example, there is the NEO (180 items), the NEO-PI-R (240 items), and the NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992; 60 items). Also, the EPQ comes in the EPQ (90 items), the EPQ-R (100 items), and the EPQ-R-S (48 items). Fortunately, the issue of commensurability at this level of detail was minimal. We kept the analysis at the domain or factor level, which Costa and McCrae (1992) reported is largely equivalent among these versions. The correlations between the NEO-PI-R and the NEO are around .94, and between the NEO-PI-R and the NEO-FFI are .90 or above, with the exception of Agreeableness and Conscientiousness. For the EPQ, the results almost completely parallel that of the NEO. The EPQ-R is almost identical to the original EPQ, except with regards to Psychoticism, the Agreeableness/Conscientiousness construct (Caruso, Witkiewitz, Belcourt-Dittloff, & Gottlieb, 2001). The long versus short form of the EPQ-R correlated together at above .92, with the exception of Psychoticism (Barrett & Eysenck, 1992). During our moderator analyses, we explored whether any of these versions provided different results, and we failed to find any significant effects.

### *Statistical Analysis*

We employed the meta-analysis procedures proposed by Hunter and Schmidt (1990) to conduct this research. Correlations were weighted according to sample size and then corrected for unreliability and sampling error in the measures at the aggregate level. Other corrections, specifically for dichotomizing a continuous variable, uneven splits, range restriction, and standard deviation splits, were conducted at the individual sample level. Consistent with the procedures of Judge, Heller, and Mount (2002), we inserted the internal consistency reliability figure as averaged within each SWB facet in the analysis when the alpha was not reported. Correlations were deemed significant if the confidence interval did not include zero. When multiple measures were used within one facet of SWB (i.e., two measures of affect) in a primary study, they were averaged to avoid overweighting these studies.

Moderator analysis used weighted least squares regression, as per Steel and Kammeyer-Mueller (2002). The information used for the moderator variables was explicitly labeled in the individual studies; consequently, the analysis consisted of coding the requisite information and separately analyzing the correlations for each moderator variable. Moderator variables that were examined included the following: gender, average age of the sample, and self-versus other-ratings of personality.

### **Results**

In total 2,142 correlation coefficients were examined to determine the relationship among SWB and personality, as measured by the NEO, EPQ, and EPI personality inventories. The coefficients were derived from 347 samples. The total number of participants

Table 1  
*Top Three Scales Measuring Each Category of Subjective Well-Being*

Category	Scale name
Happiness	1. Oxford Happiness Inventory (Argyle et al., 1989) 2. Self-Description Inventory (Fordyce, 1977) 3. Memorial University of Newfoundland Scale of Happiness (Kozma & Stones, 1980)
Life satisfaction	1. Satisfaction With Life Scale (Diener et al., 1985). 2. Life 3 Scale (Andrews & Withey, 1976) 3. Life satisfaction item of the Index of Well-Being (Campbell et al., 1976)
Positive affect	1. PANAS (Watson et al., 1988) 2. Bradburn Balanced Affect Scale (Bradburn, 1969) 3. Profile of Mood States—Vigor/Activity (McNair et al., 1971)
Negative affect	1. PANAS (Watson et al., 1988) 2. Bradburn Balanced Affect Scale (Bradburn, 1969) 3. Adjective List (Emmons & Diener, 1985)
Overall affect	1. Bradburn Balanced Affect Scale (Bradburn, 1969) 2. PANAS (Watson et al., 1988) 3. Affectometer 2 (Kammann & Flett, 1983)
Quality of life	1. Scales of Psychological Well-Being (Ryff, 1989) 2. Perceived Quality of Life Scale (Andrews & Withey, 1976) 3. Lancashire Quality of Life Profile (Oliver et al., 1996)

Note. PANAS = Positive and Negative Affect Schedule.

across all studies was 122,588, with a median of 179 and a mean of 354 participants per sample. The mean age of the samples was 37.24 years ( $SD = 7.64$ ), 45% of which were men. The research methodology was almost exclusively self-report, with 3% using other-report. The majority of the samples were from North America ( $k = 167$ ), followed by the United Kingdom ( $k = 45$ ), whereas the remaining of the studies originated from various countries in Europe, Asia, Australia, or unknown. Most of the research was conducted in field samples, which incorporated convenience-sampling techniques.

To examine the relationship between personality and SWB, we calculated the weighted correlation for each facet of SWB with each dimension of personality. The number of independent samples included in each analysis ranged from 1 to 73. Statistical significance is reached only when the 95% confidence interval does not include zero. However, the results are deemed practically significant when the 95% credibility range does not include zero. As expected, many of the relationships were both statistically and practically significant.

Analyses specific to the NEO inventories are reported in Table 2. The findings suggest that Neuroticism, Extraversion, Agreeableness, and Conscientiousness are significantly related to all SWB

facets. Openness to Experience was significantly related to happiness, positive affect, and quality of life, but it was not significantly related to life satisfaction, negative affect, and overall affect. Neuroticism is clearly the strongest predictor of SWB, particularly for negative affect ( $\rho = .64, k = 73$ ), happiness ( $\rho = -.51, k = 6$ ), overall affect ( $\rho = -.59, k = 15$ ), and quality of life ( $\rho = -.72, k = 5$ ). Similarly, Extraversion is a strong predictor of positive affect ( $\rho = .54, k = 53$ ), happiness ( $\rho = .57, k = 6$ ), overall affect ( $\rho = .44, k = 11$ ), and quality of life ( $\rho = .54, k = 4$ ). Conscientiousness is a strong predictor of quality of life ( $\rho = .51, k = 4$ ).

Analyses specific to the EPQ are reported in Table 3. Neuroticism and Extraversion are significantly related to all SWB measures. Psychoticism is also related to all SWB measures except quality of life. Defensiveness is significantly related to happiness and life satisfaction, but not positive affect, negative affect, and overall affect. There was only one study investigating the relationship between Defensiveness and quality of life precluding any meta-analytic significance testing (i.e., a single study cannot be meta-analyzed). Consistent with the findings from the NEO inventories, Neuroticism is the best predictor evident by numerous strong relationships, including negative affect ( $\rho = .69, k = 33$ ), overall affect ( $\rho = -.63, k = 12$ ), quality of life ( $\rho = -.64, k =$

Table 2  
Meta-Analytic Subjective Well-Being Results for the Neuroticism-Extraversion-Openness Inventory

Construct	K	n	$\bar{r}$	$\bar{r}$ 95% interval		Q statistic	$\rho$	$\rho$ 95% interval			
				Confidence	Credibility			Confidence	Credibility	Q statistic	
<b>Neuroticism</b>											
Happiness	6	621	-.46	-.40, -.51	-.46, -.46	$p = .4145$	-.51	-.44, -.57	-.51, -.51	$p = .4029$	
Life satisfaction	36	9,277	-.38	-.35, -.42	-.21, -.55	$p < .0001$	-.45	-.41, -.49	-.25, -.66	$p < .0001$	
Positive affect	57	11,788	-.30	-.27, -.33	-.13, -.47	$p < .0001$	-.35	-.32, -.39	-.16, -.55	$p < .0001$	
Negative affect	73	16,764	.54	.51, .57	.32, .77	$p < .0001$	.64	.60, .67	.37, .91	$p < .0001$	
Overall affect	15	3,859	-.50	-.46, -.54	-.37, -.63	$p < .0001$	-.59	-.55, -.64	-.38, -.80	$p < .0001$	
Quality of life	5	967	-.53	-.49, -.56	-.53, -.53	$p = .4634$	-.72	-.67, -.77	-.61, -.82	$p = .1033$	
<b>Extraversion</b>											
Happiness	6	829	.49	.40, .58	.31, .67	$p = .0041$	.57	.47, .68	.37, .78	$p = .0048$	
Life satisfaction	35	10,528	.28	.24, .31	.11, .44	$p < .0001$	.35	.30, .39	.14, .55	$p < .0001$	
Positive affect	53	12,898	.44	.41, .47	.24, .65	$p < .0001$	.54	.50, .58	.28, .80	$p < .0001$	
Negative affect	49	11,569	-.18	-.16, -.21	-.04, -.33	$p < .0001$	-.23	-.19, -.26	-.05, -.40	$p < .0001$	
Overall affect	11	2,410	.34	.27, .40	.17, .51	$p = .0002$	.44	.36, .53	.21, .68	$p < .0001$	
Quality of life	4	767	.40	.35, .45	.40, .40	$p = .3834$	.54	.47, .61	.54, .54	$p = .5175$	
<b>Openness to Experience</b>											
Happiness	5	779	.13	.03, .23	-.04, .29	$p = .0267$	.14	.03, .26	-.05, .33	$p = .0258$	
Life satisfaction	26	9,075	.03	.01, .06	-.03, .10	$p = .0629$	.04	.01, .07	-.04, .12	$p = .0778$	
Positive affect	27	7,340	.20	.16, .24	.04, .36	$p < .0001$	.26	.21, .31	.06, .46	$p < .0001$	
Negative affect	26	8,008	-.02	-.06, .01	-.17, .13	$p < .0001$	-.03	-.08, .02	-.23, .16	$p < .0001$	
Overall affect	7	1,373	.04	-.10, .18	-.08, .18	$p = .0257$	.07	-.05, .16	-.13, .26	$p = .0370$	
Quality of life	6	1,305	.16	.07, .25	-.02, .34	$p = .0027$	.23	.09, .35	.03, .43	$p = .0178$	
<b>Agreeableness</b>											
Happiness	4	441	.30	.22, .38	.31, .31	$p = .2736$	.36	.26, .47	.36, .36	$p = .2737$	
Life satisfaction	22	7,459	.14	.11, .17	.06, .23	$p = .0188$	.19	.15, .22	.10, .28	$p = .0712$	
Positive affect	23	6,040	.12	.09, .16	.02, .23	$p = .0087$	.15	.11, .19	.02, .28	$p = .0061$	
Negative affect	27	7,306	-.20	-.17, -.23	-.11, -.29	$p = .0187$	-.26	-.22, -.29	-.18, -.34	$p = .1095$	
Overall affect	6	1,035	.14	.09, .19	.14, .14	$p = .5818$	.20	.13, .26	.20, .20	$p = .5632$	
Quality of life	4	767	.23	.15, .30	.17, .29	$p = .1908$	.31	.21, .40	.22, .39	$p = .1873$	
<b>Conscientiousness</b>											
Happiness	4	441	.25	.17, .33	.25, .25	$p = .3804$	.27	.19, .36	.28, .28	$p = .3804$	
Life satisfaction	25	6,685	.22	.18, .25	.10, .33	$p = .0018$	.27	.23, .32	.14, .40	$p = .0042$	
Positive affect	24	5,976	.27	.22, .31	.08, .46	$p < .0001$	.31	.27, .37	.10, .54	$p < .0001$	
Negative affect	28	7,749	-.20	-.17, -.24	-.03, -.38	$p < .0001$	-.26	-.20, -.30	-.06, -.45	$p < .0001$	
Overall affect	5	829	.22	.12, .32	.04, .39	$p = .014$	.29	.15, .42	-.06, .52	$p = .0139$	
Quality of life	4	767	.40	.33, .46	.37, .42	$p = .2482$	.51	.43, .59	.48, .54	$p = .2468$	



Table 3  
Meta-Analytic Subjective Well-Being Results for the Eysenck Personality Questionnaire

Construct	K	n	$\bar{r}$	$\bar{r}$ 95% interval			Q statistic	$\rho$	$\rho$ 95% interval		
				Confidence	Credibility				Confidence	Credibility	Q statistic
<b>Neuroticism</b>											
Happiness	32	8,298	-.44	-.41, -.47	-.31, -.57	$p < .0001$	-.52	-.49, -.56	-.36, -.68	$p < .0001$	
Life satisfaction	23	6,043	-.41	-.38, -.45	-.29, -.54	$p < .0001$	-.49	-.45, -.53	-.34, -.64	$p < .0001$	
Positive affect	33	7,902	-.27	-.24, -.30	-.15, -.38	$p = .0007$	-.33	-.30, -.37	-.19, -.47	$p = .0006$	
Negative affect	33	14,066	.56	.54, .59	.43, .69	$p < .0001$	.69	.66, .72	.56, .82	$p < .0001$	
Overall affect	12	2,198	-.50	-.46, -.53	-.46, -.53	$p = .1519$	-.63	-.58, -.68	-.63, -.63	$p = .4536$	
Quality of life	10	3,864	-.55	-.51, -.59	-.41, -.68	$p < .0001$	-.64	-.59, -.71	-.49, -.80	$p < .0001$	
<b>Extraversion</b>											
Happiness	37	9,289	.41	.39, .44	.30, .53	$p < .0001$	.48	.45, .51	.34, .61	$p < .0001$	
Life satisfaction	25	6,443	.20	.17, .24	.09, .32	$p = .0023$	.25	.21, .29	.11, .38	$p = .003$	
Positive affect	40	15,260	.35	.32, .37	.22, .47	$p < .0001$	.43	.40, .46	.29, .57	$p < .0001$	
Negative affect	35	14,528	-.15	-.11, -.17	-.05, -.24	$p = .0003$	-.18	-.15, -.20	-.07, -.29	$p = .0004$	
Overall affect	7	894	.32	.26, .39	.24, .41	$p = .0903$	.45	.36, .55	.28, .63	$p = .1732$	
Quality of life	5	868	.35	.30, .40	.35, .35	$p = .511$	.39	.34, .44	.39, .39	$p = .511$	
<b>Psychoticism</b>											
Happiness	23	5,499	-.10	-.05, -.14	.06, -.26	$p < .0001$	-.14	-.08, -.20	.09, -.37	$p < .0001$	
Life satisfaction	12	1,964	-.24	-.18, -.29	-.10, -.37	$p = .0237$	-.35	-.26, -.44	-.15, -.55	$p = .0244$	
Positive affect	11	8,929	.00	.02, -.03	.04, -.04	$p = .1434$	.00	.03, -.04	.06, -.06	$p = .1433$	
Negative affect	10	8,867	.03	.00, .06	-.04, .10	$p = .0144$	.04	.00, .09	-.06, .14	$p = .0151$	
Overall affect	4	408	-.11	-.07, -.15	-.11, -.11	$p = .8538$	-.20	-.12, -.26	-.20, -.20	$p = .9223$	
Quality of life	4	585	-.02	.20, -.24	.39, -.43	$p < .0001$	-.02	.30, -.35	.58, -.63	$p < .0001$	
<b>Defensiveness</b>											
Happiness	19	4,625	.12	.09, .16	.03, .21	$p = .0432$	.16	.11, .20	.04, .27	$p = .0506$	
Life satisfaction	11	1,080	.12	.09, .16	.12, .12	$p = .9596$	.16	.11, .20	.16, .16	$p = .9592$	
Positive affect	7	1,081	-.04	.01, -.10	-.04, -.04	$p = .4604$	-.07	.02, -.16	-.07, -.07	$p = .4513$	
Negative affect	7	1,438	-.05	.02, -.12	.08, -.18	$p = .0376$	-.09	.03, -.20	.13, -.30	$p = .1497$	
Overall affect	4	408	.07	-.03, .17	.07, .07	$p = .9718$	.11	-.05, .27	.11, .11	$p = .9877$	
Quality of life	2	185	-.06	.13, -.25	.11, -.23	$p = .0646$	-.07	.15, -.29	.13, -.27	$p = .0646$	

10), and happiness ( $\rho = -.52, k = 32$ ). SWB measures that are best predicted by Extraversion include happiness ( $\rho = .48, k = 37$ ), positive affect ( $\rho = .43, k = 40$ ), overall affect ( $\rho = .45, k = 7$ ), and quality of life ( $\rho = .39, k = 5$ ).

Analyses specific to the EPI are reported in Table 4. Neuroticism and Extraversion are significantly related to all SWB measures. However, meta-analytic significance testing of the relationship between Neuroticism and quality of life was not possible because there was

only one study reporting this relationship. Neuroticism best predicts negative affect ( $\rho = .54, k = 23$ ), life satisfaction ( $\rho = -.42, k = 12$ ), overall affect ( $\rho = -.51, k = 7$ ), and happiness ( $\rho = -.40, k = 5$ ). Extraversion best predicts positive affect ( $\rho = .31, k = 24$ ) and life satisfaction ( $\rho = .29, k = 7$ ).

Independent sample *t* tests were conducted to compare the findings of the present investigation with previous meta-analytic findings. Undoubtedly, some of the samples included in our anal-

Table 4  
Meta-Analytic Subjective Well-Being Results for the Eysenck Personality Inventory

Construct	K	n	$\bar{r}$	$\bar{r}$ 95% interval			Q statistic	$\rho$	$\rho$ 95% interval		
				Confidence	Credibility				Confidence	Credibility	Q statistic
<b>Neuroticism</b>											
Happiness	5	1,157	-.34	-.26, -.43	-.20, -.49	$p = .0095$	-.40	-.30, -.49	-.24, -.56	$p = .0111$	
Life satisfaction	12	2,414	-.33	-.27, -.39	-.17, -.50	$p = .0003$	-.42	-.35, -.50	-.22, -.63	$p = .0005$	
Positive affect	22	4,332	-.15	-.10, -.19	-.01, -.29	$p = .001$	-.19	-.13, -.23	-.03, -.34	$p = .007$	
Negative affect	23	4,686	.46	.40, .48	.28, .61	$p < .0001$	.54	.49, .59	.37, .71	$p < .0001$	
Overall affect	7	1,176	-.44	-.33, -.55	-.18, -.70	$p < .0001$	-.51	-.38, -.63	-.21, -.80	$p < .0001$	
Quality of life	1	246	-.26				-.40				
<b>Extraversion</b>											
Happiness	4	1,242	.18	.06, .30	-.04, .39	$p = .0001$	.21	.07, .36	-.04, .47	$p = .0001$	
Life satisfaction	7	2,545	.20	.16, .23	.20, .20	$p = .4826$	.29	.24, .34	.29, .29	$p = .4602$	
Positive affect	24	5,014	.25	.20, .30	.05, .46	$p < .0001$	.31	.25, .37	.08, .54	$p < .0001$	
Negative affect	20	4,576	-.09	-.05, -.13	.03, -.22	$p = .0031$	-.11	-.06, -.16	.04, -.27	$p = .003$	
Overall affect	6	1,864	.17	.11, .24	.05, .29	$p = .021$	.20	.12, .28	.06, .34	$p = .0214$	
Quality of life	2	364	.21	.11, .31	.20, .22	$p = .1559$	.32	.16, .46	.32, .32	$p = .2128$	

ysis were also included in the previous meta-analyses; however, independent sample tests were conducted for two reasons. First, most of the samples did not overlap between analyses. Second, using independent rather than dependent sample *t* tests results in more conservative findings. Specifically, the happiness, life satisfaction, positive affect, and negative affect uncorrected correlations were compared with those produced by DeNeve and Cooper (1998), estimating 285 participants per study (i.e., on the basis of their total sample size of 42,171 and 148 studies). All comparative analyses are reported in Table 5. In short, 26 out of the possible 36 comparisons with DeNeve and Cooper's findings were significantly greater in magnitude, 3 were smaller, and 7 were essentially equivalent.

The intercorrelations between the personality dimensions are reported in Table 6, which are needed to conduct the multiple regression analyses (i.e., Tables 7, 8, and 9). Correlations are below the diagonal, whereas the number of studies per estimate is above in parentheses. On average, the sample size is 472 participants per study. Internal consistency reliability is along the diagonal. Most of the substantive intercorrelations were between the NEO and the EPQ. The EPI appears to be overshadowed by the development of the EPQ, in which researchers, understandably given the choice, have preferred to use the newer EPQ exclusively. Consistent with Saucier's (2002) research, these findings suggest that the dimensions are not completely orthogonal for the NEO, EPQ, or EPI inventories.

We conducted multivariate analyses using LISREL 8.54 to determine the combined and incremental contribution of the personality traits to the prediction of SWB. Tables 7, 8, and 9 provide the results of the multiple regression analyses for the NEO, EPQ, and EPI, respectively. Beta weights for each personality dimension are reported as well as total variance accounted for, both attenuated (i.e.,  $R^2$ ) and disattenuated (i.e.,  $\rho^2$ ). Results range from  $R^2 = .39$  ( $\rho^2 = .63$ ) for the NEO and quality of life to  $R^2 = .10$  ( $\rho^2 = .10$ ) for the EPI and quality of life.

### Consistency Analysis

Moderator searches were conducted to determine the consistency of the results between personality and SWB conceptualiza-

tions. The observed residual variance (i.e., the variance after taking into account sampling error) among the meta-analytic correlations should be largely resistant to demographic differences among the studies. To this end, age and sex were available for analysis. To ensure adequate sample size and enough statistical power, we conducted analyses across all personality scales. Consequently, moderator searches focused on Extraversion and Neuroticism, which were common across all scales, and these traits represented the two strongest correlates. All analyses were weighted by sample size, and we controlled for differences among personality scales (e.g., the NEO vs. the EPQ) by dummy coding and entering them into the regression analyses first. The moderators specific to each SWB conceptualization are reported next. As expected, different SWB constructs typically appear to be only marginally susceptible to moderator effects.

To begin with, age may affect the Neuroticism and positive affect relationship. Slightly stronger correlations may exist when participants are younger in age ( $\Delta R^2 = .05$ ,  $p < .05$ ). Sex showed similar weak effects. For life satisfaction, the relationship increased for women relative to men for both Extraversion ( $\Delta R^2 = .09$ ,  $p < .05$ ) and Neuroticism ( $\Delta R^2 = .07$ ,  $p < .05$ ). Also, the findings suggest that stronger correlations between Neuroticism and negative affect are reported for men compared with women ( $\Delta R^2 = .05$ ,  $p = .01$ ).

### Commensurability Analyses

We assessed commensurability in two ways. To confirm that there are significant difference among the NEO, EPQ, and EPI, we compared the amount of variance that the different personality models account for in SWB. If these models are equivalent, they should account for the same amount of variance in SWB. Second, to confirm that we are operating at the correct level of commensurability, we used a moderator search to determine whether differences among versions of the measures significantly impacted the results.

When examining the amount of variance that the personality dimensions account for among the SWB constructs (see Tables 7, 8, and 9), we found important differences. Quality of life typically had the most variance accounted for, with an  $R^2$  of .39 for the NEO

Table 5  
Significance Testing of Our Findings in Comparison to Previous Meta-Analyses

Construct	Happiness		Life satisfaction		Positive affect		Negative affect	
	<i>z</i>	<i>p</i>	<i>z</i>	<i>p</i>	<i>z</i>	<i>p</i>	<i>z</i>	<i>p</i>
NEO								
Neuroticism	5.68 <sup>a</sup>	.00	11.34 <sup>a</sup>	.00	12.66 <sup>a</sup>	.00	-28.14 <sup>a</sup>	.00
Extraversion	-6.82 <sup>a</sup>	.00	-9.17 <sup>a</sup>	.00	-20.82 <sup>a</sup>	.00	7.99 <sup>a</sup>	.00
Openness	-1.81	.07	7.16 <sup>b</sup>	.00	-2.90 <sup>a</sup>	.00	3.09 <sup>a</sup>	.00
Agreeableness	-2.33 <sup>a</sup>	.02	1.43	.15	2.79 <sup>b</sup>	.01	3.82 <sup>a</sup>	.00
Conscientiousness	-1.87	.06	0.00	1.00	-7.68 <sup>a</sup>	.00	5.59 <sup>a</sup>	.00
EPQ								
Neuroticism	12.20 <sup>a</sup>	.00	12.20 <sup>a</sup>	.00	9.19 <sup>a</sup>	.00	-29.36 <sup>a</sup>	.00
Extraversion	-8.59 <sup>a</sup>	.00	-2.10 <sup>a</sup>	.04	-13.05 <sup>a</sup>	.00	6.06 <sup>a</sup>	.00
EPI								
Neuroticism	3.03 <sup>a</sup>	.00	4.41 <sup>a</sup>	.00	0.57	.57	-14.56 <sup>a</sup>	.00
Extraversion	2.94 <sup>b</sup>	.00	-1.45	.15	-3.09 <sup>a</sup>	.00	1.11	.27

Note. NEO = Neuroticism-Extraversion-Openness Inventory; EPQ = Eysenck Personality Questionnaire; EPI = Eysenck Personality Inventory.  
<sup>a</sup> Our correlation is significantly greater in magnitude. <sup>b</sup> Our correlation is significantly lower in magnitude.

Table 6  
Correlations Among NEO, EPQ, and EPI Dimensions

Construct	NEO traits					EPQ traits				EPI traits	
	N	E	O	A	C	N	E	P	D	N	E
NEO											
Neuroticism	.83	(57)	(33)	(34)	(37)	(11)	(9)	(7)	(5)	(2)	(2)
Extraversion	-.33	.77	(28)	(28)	(31)	(9)	(11)	(6)	(5)	(2)	(2)
Openness	-.09	.24	.73	(28)	(28)	(7)	(8)	(8)	(4)		
Agreeableness	-.23	.19	.10	.71	(27)	(7)	(3)	(6)	(5)		
Conscientiousness	-.33	.28	.01	.18	.79	(7)	(6)	(4)	(4)		
EPQ											
Neuroticism	.72	-.19	.00	-.16	-.12	.82	(41)	(18)	(15)		
Extraversion	-.23	.71	.25	.16	.05	-.25	.84	(20)	(14)		
Psychoticism	.11	-.06	.07	-.29	-.21	.08	.07	.64	(13)		
Defensiveness	-.13	-.10	-.21	.16	.37	-.12	-.10	-.22	.70		
EPI											
Neuroticism	.81	-.24								.84	(16)
Extraversion	-.19	.65								-.14	.79

Note. Correlations are reported below the diagonal, whereas the number of studies used in the analyses is reported in the parentheses above the diagonal. Reliability is reported in italics along the diagonal. NEO = Neuroticism-Extraversion-Openness Inventory; EPQ = Eysenck Personality Questionnaire; EPI = Eysenck Personality Inventory; N = Neuroticism; E = Extraversion; O = Openness; A = Agreeableness; C = Conscientiousness; P = Psychoticism; D = Defensiveness.

and an  $R^2$  of .36 for the EPQ. On the other hand, life satisfaction typically had the least amount accounted for, ranging from an  $R^2$  of .13 for the EPI to an  $R^2$  of .23 for the EPQ. Consequently, the different measures of SWB are not interchangeable.

Furthermore, the amount of variance accounted for differs according to which personality scale is used. The EPI, on average, predicts about 14% of the variance, whereas both the NEO and the EPQ predict about double that or 28%. It is clear that the choice of which scale is used will substantively affect the overall results. Still, there are consistencies. Neuroticism always presents the largest beta weights except for positive affect, in which Extraversion is the largest, and for happiness, in which the results are mixed.

We can also examine the variance accounted for to assess commensurability from another direction. If the measures are functionally equivalent, they should not account for incremental variance above one another. To evaluate this, we focus on practical significance, not statistical, given that the large sample sizes associated with meta-analysis make almost any increase statistically

significant (e.g.,  $\Delta R^2 = .02$  is typically significant here at well below  $p < .001$ ). As per Table 6, all the intercorrelations between the EPQ and the NEO are estimated, allowing a full comparison between both models. Hierarchical regression reveals that, on average, the EPQ incrementally predicts above the NEO by 7%, ranging from 3% for positive affect to 14% for quality of life. Alternatively, the NEO incrementally predicts above the EPQ by 9% on average, ranging from 3% for life satisfaction to 17% for quality of life. For the EPI, the only cross-correlations are with the NEO, and then only for Neuroticism and Extraversion. Limiting ourselves to this subset, on average the EPI predicts above the NEO by 2%, ranging from 0% for negative and overall affect to 8% for quality of life. Conversely, the NEO typically predicts above the EPI by 15%, ranging from 4% for life satisfaction to 32% for quality of life. Clearly, the measures are not wholly interchangeable.

Finally, we used moderator analysis to determine the commensurability within the different forms of SWB categories and per-

Table 7  
Results of the Multiple Regression Analysis With the NEO Personality Dimensions

NEO variable	Beta weights					
	Happiness	Life satisfaction	Positive affect	Negative affect	Overall affect	Quality of life
Neuroticism	-.30*	-.30*	-.14*	.52*	-.43*	-.38*
Extraversion	.35*	.17*	.33*	.00	.20*	.19*
Openness	.01	-.04*	.11*	.03*	-.05*	.07*
Agreeableness	.13*	.03*	-.01	-.08*	-.04	.06*
Conscientiousness	.03	.07*	.13*	-.02*	.02	.21*
Error variance	.64*	.82*	.76*	.70*	.71*	.62*
$R^2$	.36*	.18*	.24*	.30*	.29*	.39*
$\rho^2$	.43*	.24*	.34*	.42*	.40*	.63*

Note. NEO = Neuroticism-Extraversion-Openness Inventory.  
\*  $p < .05$ .

Table 8  
Results of the Multiple Regression Analysis With the EPQ Personality Dimensions

EPQ variable	Beta weights					
	Happiness	Life satisfaction	Positive affect	Negative affect	Overall affect	Quality of life
Neuroticism	-.34*	-.36*	-.20*	.56*	-.44*	-.51*
Extraversion	.34*	.13*	.30*	-.01	.22*	.21*
Psychoticism	-.08*	-.21*	-.01	-.01	-.09*	-.02
Defensiveness	.10*	.04*	-.04*	.01	.02	-.10*
Error variance	.69*	.77*	.84*	.69*	.70*	.64*
$R^2$	.31*	.23*	.16*	.31*	.30*	.36*
$\rho^2$	.42*	.35*	.23*	.48*	.50*	.47*

Note. EPQ = Eysenck Personality Questionnaire.

\*  $p < .05$ .

sonality measures. To determine whether we should display state and trait affect measures separately, we ran a stepwise WLS multivariate regression. In the first step, we entered variables pertaining to the type of measure (e.g., NEO vs. EPQ) and type of affect (i.e., positive vs. negative). For the second step, we entered whether it was a state or a trait. The second step added no incremental variance,  $F(1, 660) = 0.935$ ,  $ns$ , and consequently the relationship of affect to personality appears to be functionally uniform at both a state and trait level. This finding is not entirely unexpected.<sup>1</sup> It is consistent with two other meta-analyses: DeNeve and Cooper's (1998) results with positive affect as well as Lucas and Fujita's (2000) finding regarding the effects of sampling duration on daily or moment ratings of affect. In a similar manner, we examined the effects of long versus short forms as well as revised versions for the NEO, the EPQ, and the EPI. No significant effects were found, supporting that this meta-analysis is operating at the correct level of commensurability.

### Common Method Bias Analysis

There is a possibility of a common method bias affecting our results, in which the relationship is due simply to the method of measurement rather than the underlying construct. We were able to assess this in three different ways. First, we examined the difference between self- versus other-reports. Second, we used the multi-trait multi-method approach to examine differences and commonalities among measures of personality and SWB constructs. Third, we examined Extraversion and Neuroticism as a facet level, controlling for areas of potential overlap.

To begin with, McCrae and Costa (1991) noted that self-report relationships may be criticized as "artificial, attributable to shared method variance in self-reported personality scales and self-reported well-being" (p. 230). Three major studies that used our target measures examined this (Lucas & Fujita, 2000; McCrae & Costa, 1991; Watson, Hubbard, & Wiese, 2000b), testing other-other as well as self-other assessments. Other-other relationships, in which another assesses both your SWB and personality, actually generate much stronger correlations, on average .18 larger in magnitude. More directly relevant are self-other relationships, as their distinct source design largely eliminates the threat of shared error, though results can be hard to interpret as any drop in the magnitude of correlations can also be due to the difficulty indi-

viduals have in judging other people's traits (Funder & Colvin, 1997). Fortunately, in these cases interpretation was straightforward, as the results were typically unaffected by using dissimilar sources; the exception perhaps being Extraversion, where in two studies of approximately equal size, the magnitude of correlations decreased in one (McCrae & Costa, 1991) and was unaffected in the other (Lucas & Fujita, 2000). In all, it appears that the threat of common method bias is at most minimal, consistent with Watson, Hubbard, and Wiese's (2000b) conclusion that "most affective traits tend to show moderate to strong levels of self-other agreement" (p. 552).

Second, we used data from Tables 2, 3, 4, and 6 to apply the multi-trait multi-method approach for differentiating among constructs. Ideally, correlations among the same construct should show the strongest relationships even if assessed with different measures. Table 6 reveals that the average correlations among the different measures of Neuroticism and Extraversion are .77 and .68, respectively. Notably, these figures are approaching that of "alternative forms," as the average internal reliability is .83 for Neuroticism and .80 for Extraversion. We can contrast this with the average correlation with affect. For Neuroticism and negative affect, the correlation is .52, whereas the correlation between Extraversion and positive affect is .35. As can be seen, though factor models of personality may incorporate affective components, they are not equivalent to them. Neuroticism and Extraversion are broader constructs.

Finally, we directly assessed criterion contamination. As mentioned, there can be significant overlap between personality and SWB constructs. However, it was argued that this is inherently due to the nature of personality taxonomies generated with factor analysis. They would necessarily incorporate SWB elements if other facets of personality already had a strong relationship with them. To test this, we examined the key traits of Extraversion and

<sup>1</sup> State versus trait is a continuous dimension, in which state can reflect how one feels right now or over the last week or several months. Although state measures were not significantly related to the results obtained here, we expect that state measures that exclusively focus on very recent feelings (e.g., "how do you feel today?" instead of "this week" or "month") should show a diminished correlation with personality traits, as per Steyer, Ferring, and Schmitt (1992).

Table 9  
Results of the Multiple Regression Analysis With the EPI Personality Dimensions

EPI variable	Beta weights					
	Happiness	Life satisfaction	Positive affect	Negative affect	Overall affect	Quality of life
Neuroticism	-.32*	-.31*	-.12*	.46*	-.42*	-.24*
Extraversion	.14*	.16*	.23*	-.03*	.11*	.18*
Error variance	.87*	.87*	.92*	.79*	.79*	.90*
R <sup>2</sup>	.13*	.13*	.08*	.21*	.21*	.10*
ρ <sup>2</sup>	.18*	.23*	.12*	.29*	.27*	.23*

Note. EPI = Eysenck Personality Inventory.  
\*  $p < .05$ .

Neuroticism at a facet level, controlling for any potential criterion contamination. If common method variance is not a problem, results should remain strong or at least drop minimally after eliminating any facets that possibly overlap with SWB.

Using the NEO, we show in Table 10 the correlations among the facets of Extraversion, Neuroticism, and SWB. On average, each SWB correlation was based on 256 participants, and each facet intercorrelation was based on 407 participants. There were three SWB constructs that had two or more samples with which to estimate: life satisfaction, positive affect, and negative affect. For each of these SWB constructs, we examined the percentage of variance explained with and without any potentially overlapping facets. That is, Extraversion is comprised of the following: Warmth, Gregariousness, Assertiveness, Activity, Excitement Seeking, and Positive Emotions. We controlled for Positive Emotions. Neuroticism is comprised of the following: Anxiety, Anger, Depression, Self Consciousness, Impulsiveness, and Vulnerability. We controlled for both Anxiety and Depression.

A multiple regression of Extraversion’s facets on life satisfaction generated an improbably high  $R^2$  of .97, indicating that some correlates are likely not well estimated with just two samples. Still, if we drop Positive Emotions from equation, we generate an  $R^2$  of .20, which is considerably stronger than the  $R^2$  of .08 seen between Extraversion and life satisfaction at the trait level (see Table 2). Similarly, a multiple regression of life satisfaction and Neuroticism’s facets also generated an extremely strong  $R^2$  of .69, dropping to .24 when controlling for Anxiety and Depression. Again, at the trait level, the  $R^2$  between the two is just .14 (see Table 2).

Positive and negative affect had more samples with which to estimate and consequently proved to be better behaved. Positive affect’s  $R^2$  with Extraversion’s facets was .50, dropping to .44 after controlling for Positive Emotions. Its relationship with Neuroticism’s facets was .26, dropping to .21 after controlling for Anxiety and Depression. For negative affect, Extraversion’s  $R^2$  was .10, which was unaffected by dropping Positive Emotions. For Neu-

Table 10  
Correlations Among Facet Scales and SWB Dimensions

Variable	Neuroticism					Extraversion					SWB				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<b>Neuroticism</b>															
1. Anxiety	.78	(3)	(3)	(3)	(3)	(3)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(3)	(4)
2. Anger	.58	.75	(3)	(3)	(3)	(3)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(3)	(3)
3. Depression	.80	.66	.81	(3)	(3)	(3)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(3)	(4)
4. Self-consciousness	.76	.5	.81	.69	(3)	(3)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(3)	(3)
5. Impulsiveness	.45	.57	.52	.44	.70	(3)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(4)	(3)
6. Vulnerability	.78	.58	.80	.76	.50	.77	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(3)	(3)
<b>Extraversion</b>															
7. Warmth	-.09	-.34	-.25	-.29	.03	-.23	.74	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
8. Gregariousness	-.08	-.2	-.24	-.3	.07	-.12	.69	.73	(3)	(3)	(3)	(3)	(3)	(3)	(3)
9. Assertiveness	-.32	-.05	-.39	-.58	-.04	-.52	.42	.34	.77	(3)	(3)	(3)	(3)	(4)	(3)
10. Activity	-.07	.12	-.18	-.15	.09	-.31	.34	.45	.63	.63	(3)	(3)	(3)	(4)	(3)
11. Excitement seeking	0	.16	-.01	-.15	.38	-.09	.26	.53	.32	.55	.65	(3)	(3)	(4)	(3)
12. Positive emotions	-.10	-.16	-.24	-.16	.24	-.25	.73	.48	.32	.63	.51	.74	(3)	(4)	(3)
<b>SWB</b>															
13. Life satisfaction	-.31	-.35	-.49	-.43	-.12	-.39	.26	.29	.37	.17	.23	.46	.84		
14. Positive affect	-.29	-.09	-.39	-.33	-.13	-.42	.44	.36	.46	.65	.32	.59		.82	
15. Negative affect	.64	.58	.64	.55	.44	.63	-.23	-.10	-.20	-.23	-.06	-.27			.85

Note. Correlations are reported below the diagonal, whereas the number of studies used in the analyses is reported in parentheses above the diagonal. Reliability is reported in italics along the diagonal. SWB = subjective well-being.

roticism, negative affect's  $R^2$  was .50, dropping to .47 when controlling for criterion contamination.

These results strongly indicate that criterion contamination is not a significant issue. First, typically the decrease in the relationship was minor, with the exception of life satisfaction, which generated improbably large initial figures. Second, regardless of the SWB construct examined, the relationship remained strong after dropping potentially overlapping facets. In other words, the relationship between SWB and personality appears to be "genuine," with any enhancement due to common method bias being slight and nonsubstantive.

### Discussion

There are several lines of inquiry that indicates SWB and personality should be strongly related. To begin with, there is support for numerous strong direct and indirect relationships between SWB and personality, such as common biological mechanisms. Second, the two constructs are often operationalized similarly, and twin studies have indicated that a substantial portion of stable SWB is likely due to traits. Finally, theory indicates that personality should have stronger associations with SWB in less powerful situations; thus, job satisfaction, rather than life satisfaction, should demonstrate lower correlations with personality traits. Our findings are now consistent with each of these notions.

The results of the present investigation indicate that personality traits play a much greater role in determining an individual's general level of SWB than previously thought. Almost every comparable analysis produced correlations of a greater magnitude relative to DeNeve and Cooper's (1998) meta-analytic findings. The size of the difference is clearly evident when examining Extraversion and Neuroticism, in which the observed relationships often doubled, tripled, and even quadrupled. For example, DeNeve and Cooper found that Extraversion accounted for approximately 4% of the variance for positive affect, whereas the present analysis indicates it is as high as 19% (i.e., with the NEO) or 28% disattenuated. Similarly, the NEO Neuroticism scale accounted for 29% of the variance in negative affect, or 41% disattenuated, whereas previous findings suggested 5%. Furthermore, we have also considered the combined relationship of personality to SWB using multivariate meta-analytic regression. For this analysis, findings reached as high as 39% of the variance or 63% disattenuated, between the NEO and quality of life measures.

The primary reason for the difference in findings appears to be commensurability. Though there is a wide assortment of potential moderator effects, from demographics to research design, consistently one of the largest factors is scale differences. In other words, scales or measures that nominally appear identical may actually possess quite different properties. This appears to be especially true for personality. As shown here, the SWB relationships for the EPI and the EPQ, despite both being developed by Eysenck and the latter being based on the former, are substantially different. Unfortunately, though these findings indicate that aggregating various personality measures considerably reduces precision, testing the equivalence of scales is very sporadic (Cortina, 2003; Doty & Glick, 1998). Still, such "clumping" may be necessary for any early investigation, as there simply may not be enough studies to properly pursue the matter. As previously mentioned, DeNeve and Cooper's (1998) groundbreaking meta-analysis contained only

five SWB studies examining Psychoticism, a fraction of what is presently available. Similarly, Lucas and Fujita (2000) found 17 samples to examine the relationship that the NEO Extraversion scale has with positive/pleasant affect, compared with the 52 samples in the present meta-analysis.

These results mean that personality is extremely important for understanding SWB. Notably, it helps explain *the happiness paradox*, that as countries or people become very wealthy, SWB fails to improve or even declines (e.g., Duncan, 2005; Easterlin, 2001). These findings are a particular challenge to economists, who equate wealth with increased options and consequently increased utility (i.e., satisfaction). However, it is consistent with the findings here regarding direct and indirect effects of personality on SWB. Specifically, wealth is going to have little effect on biological processes and may even adversely affect other SWB pathways, such as interpersonal relations (Baumeister & Leary, 1995; Güliz, 1997; Scitovsky, 1976). Consequently, there is much untapped potential in psychology for informing public policy, especially because personality appears to have a stronger relationship with SWB at a national level than individual (Lynn & Steel, 2006; Steel & Ones, 2002). Specifically, by taking into account the effects of personality, both direct and indirect, we could significantly increase societal well-being (Diener, 2000). If, for example, desirable personality traits are malleable during early developmental years (e.g., Schore, 2001), extended maternity/paternity leave could help parents take advantage of these critical periods. Alternatively, if impulsiveness (i.e., self-control) problems are at the root of unhappiness, many of them can be mitigated at a national level (Elster, 2000; Thaler & Sunstein, 2003), and indeed some presently are (i.e., retirement savings programs; DiCenzo, 2007).

On the other hand, that long-term happiness is largely contingent on internal characteristics does have sinister societal implications. As Frederick and Loewenstein (1999) discussed, one consequence of hedonic adaptation is that moral offense erodes over time. Though we may immediately rage against outrages to others, if they can be perpetuated for a few years, we typically will just adapt and habituate. Consequently, our humanity is more fragile and malleable than we might care to believe. For example, as Simone de Beauvoir noted—a passionate opponent of torture during France's war in Algeria—at first "the burns in the face, on the sexual organs, the nails torn out, the impalements, the shrieks, the convulsions, outraged me," but a few years later in 1961 "like many of my fellow man, I suffer from a kind of tetanus of the imagination . . . One gets used to it" (Talbot, 1980, p. 93).

To further our understanding of SWB, we now need to return to a more detailed examination of personality. The benefits of further SWB analysis with the five-factor model will invariably show diminishing returns. Also, as Diener (1996) discussed, it provides some but limited insight into etiology. Exactly how are personality traits related to SWB? As an intervening step toward explanatory research, it would be fruitful to consider more research between SWB and personality at a facet level. We located only a few studies investigating SWB at this level of precision, but the results are extremely promising. A facet level analysis accounted for approximately double the amount of variance than at a trait level. This is consistent with Schimmack, Oishi, Furr, and Funder's (2004) position. Mathematically, three events could occur at the facet level that would affect the total variance accounted for at an aggregated trait level. First, only a few variables may be related to

SWB, meaning the other irrelevant facets are essentially adding “error” in this context. Second, even if all the facets were relevant, they are equally weighted, which is unlikely to be favorable. Studying SWB at a facet level with multiple regression gives optimal weights. Third, individual facets, though positively correlated with each other, may have correlations with SWB in the opposite direction (e.g., Tett, Steele, & Beauregard, 2003).

In addition, estimates could be further refined by exploring possible interaction effects. Though Extraversion and Neuroticism both have main effects upon SWB, it is possible that being both introverted and neurotic further decreases one’s happiness (Hotard, McFatter, McWhirter, & Stegall, 1989; Pavot et al., 1990). More recently, Yik and Russell (2001) indicated that this interaction incrementally explains approximately 3% of the variance, whereas Lynn and Steel (2006) found it to be as high as 14%–19% using national-level data. As our research base expands, we should seek to meta-analytically summarize and incorporate this effect in our estimates.

Also, as our research base expands, we should attempt to control and test for scale and measurement differences whenever possible. Even in this study, in which commensurability was a focal issue, we collapsed scales into SWB categories using theoretically based dimensions. Because of the sheer number of scales used to measure SWB, and that none have dominated the literature, we cannot use the same highly focused strategy that was employed for personality. For this reason, we used many categories of SWB to keep the constructs as precise as possible while also keeping the sample size sufficient to obtain meaningful results. Moreover, careful judgments were used to both include and exclude particular measures. For example, certain measures—such as the General Health Questionnaire (D. Goldberg, 1978) and the Goldberg scales (D. Goldberg, Bridges, Duncan-Jones, & Grayson, 1988)—were excluded because they tap more into the clinical depression construct than to facets of SWB. The relationship between personality and depression or anxiety is interesting but beyond the scope of this investigation.

This indicates that there is still much to be done in determining whether there are more significant differences for SWB and other personality and attitudinal measures (e.g., self-esteem, optimism, and anxiety), though some work has already been conducted. If we consider SWB specifically, Lucas and Fujita (2000) found, consistent with our results, that EPI Extraversion produces lower correlations with pleasant affect than the NEO or EPQ scales as well as method of measurement effects (e.g., self- vs. other-ratings, daily diary vs. global). Thoresen et al. (2003) found that using Extraversion and Neuroticism as proxies for positive and negative affect generated significantly different results. Similarly, Connolly and Viswesvaran (2000) observed a significant difference among the job satisfaction measures, specifically for the Job Descriptive Index (Balzer et al., 1997) and the Minnesota Satisfaction Questionnaire (D. J. Weiss, Dawis, England, & Lofquist, 1967). Also, Judge, Heller, and Mount (2002) located several significant differences among the gamut of job satisfaction measures included in their analysis. Finally, the relationship of job facet scales to global job satisfaction is tenuous, even if all of the facets are used in the estimation (Ironson, Smith, Brannick, Gibson, & Paul, 1989; Jackson & Corr, 2002; H. M. Weiss, 2002).

In summary, the results of this review not only indicate that personality is substantially related to SWB but also that the rela-

tionship is typically much stronger than previously thought. Importantly, these results do not appear to be due to measurement error, such as using self-report data or criterion contamination. On the other hand, the findings do suggest that commensurability is indeed a potential problem that researchers need to acknowledge. Clearly, careful decisions need to be made with respect to the aggregation of measures to ensure meta-analysis does not degrade into H. J. Eysenck’s (1978, p. 517) “mega-silliness.”

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References marked with an asterisk indicate studies included in the meta-analysis; those marked with a dagger indicate studies included in the Table 5 and Table 6 analyses.

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Received July 28, 2006

Revision received August 20, 2007

Accepted August 29, 2007 ■