

KENNON M. SHELDON and TAN H. HOON

**THE MULTIPLE DETERMINATION OF WELL-BEING:  
INDEPENDENT EFFECTS OF POSITIVE TRAITS, NEEDS,  
GOALS, SELVES, SOCIAL SUPPORTS, AND CULTURAL  
CONTEXTS**

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**ABSTRACT.** Although most researchers acknowledge that subjective well-being (SWB) is multiply determined, little research and theory simultaneously considers the effects of many types of determinants, located at many different levels of analysis. Guided by a six-level model of “optimal human being” (Sheldon, 2004, ‘Optimal Human Being: An Integrated Multi-level Perspective’ (Erlbaum, Mahwah, N.J.)), we tested the hypothesis that psychological need-satisfaction, a positive Big Five trait profile, good personal goal-progress, high self-esteem, positive social support, and a happiness-conducive cultural membership would each uniquely predict SWB. These hypotheses were confirmed, supporting the hierarchical perspective and irreducibility assumption that under-girded the research. Implications for SWB theory and interventions, and for the task of integrating the many different types of personality constructs that exist, are discussed.

**KEY WORDS:** subjective well-being, personality hierarchies, culture

**INTRODUCTION**

Subjective well-being (SWB) remains a growth industry in the contemporary research scene. As just a sampling of recent activity, research has investigated the psychometric components (Pavot and Diener, 2004; Schwarz and Strack, 1999), temporal resolution (Sandvik et al., 1993), functional concomitants (Lyubomirsky et al., 2005a, b), longitudinal course (Lucas et al., 2003), personality/demographic correlates (Argyle, 1999), and cultural conditionality of SWB (Diener et al., 1995), as well as many other topics. In part spurred by the positive psychology movement (Seligman and Csikszentmihalyi, 2000), this work

contributes to an increasingly complete picture of the nature and causes of SWB (Pavot and Diener, 2004; Ryan and Deci, 2000; Sheldon, 2004).

However, one topic that has received almost no research attention is the multi-level nature of SWB – that is, the fact that SWB is simultaneously influenced by variables at many different levels of the person and world. Of course, most researchers would agree that SWB is multiply determined, by factors ranging vertically from biological to cognitive to personality to social (for example, as acknowledged in the chapter organization of the book *Well-being: The foundations of hedonic psychology*, edited by Kahneman et al., 1999). Still, to date, few theoretical or predictive frameworks have attempted to address many of these levels of analysis at the same time. How do they all contribute to influence peoples' experienced mood and sense of satisfaction? Are some levels more important than others, and others less important? More typically, researchers focus on just one level of analysis, elaborating upon ideas and measures located primarily at that level (Staats, 1999).

This article proposes a new way to conceptualize and test the multi-determination idea – namely, by measuring representative factors at major levels of organization that influence the human personality (i.e., needs, traits, goals, self-systems, social systems, and cultural systems; explicated below), and comparing their effects upon SWB. Our general hypothesis was that important and previously efficacious predictor variables derived from each level of analysis should, when combined together into a single prediction equation, each have unique main effects upon SWB. This “irreducibility hypothesis” is based on the assumption that the SWB-relevant constructs and processes identified by researchers at each level of human science are all valid – each level provides independent information regarding human thriving, and thus each should uniquely predict SWB. To use a concrete example, the positive effects of social support should not be explainable in terms of a person's positive goals, or his/her positive traits, or his/her high self-esteem; the phenomenon that has been studied by social support researchers is more than these.

An advantage of this multi-systemic approach is that it can provide a tool for evaluating the relative importance of a particular level of analysis, compared to other levels of analysis upon which one might instead focus attention. If the effects of a previously important predictive factor at a particular level of analysis fail to survive in such a “destructive testing” approach (Anderson and Anderson, 1996), then one might legitimately question the relevance of that factor and/or level of analysis for understanding that phenomenon – perhaps research attention should focus elsewhere. Conversely, this approach may provide a tool for identifying the most important factors and levels for understanding a particular phenomenon (here, SWB). Which predictors, located at which level of analysis, emerge as most essential? The potential relevance of such data for designing SWB-relevant interventions and public policies should be clear.

### **Hierarchical Frameworks for Viewing Behavior and Personality**

As a framework for the inquiry we drew from the hierarchical model of causal influences upon human behavior and well-being that was proposed by Sheldon (2004). This model formalizes the fact that behavior and feeling can be influenced by manifold levels of reality ranging from atomic to molecular to cellular to organic to neuronal to nervous-systemic to cognitive to personality to social to cultural. Each level of organization was said to emerge from the functioning of the level below, but also to have reciprocal top-down effects upon lower-level functioning (see also Sperry, 1993). In his analysis of optimal human being (i.e., the determinants of well-being and thriving), Sheldon (2004) focused primarily on the top three levels of this hierarchy, namely, the personality, social, and cultural levels, in the process identifying the constructs at each level shown to have influence on well-being. Personality processes received special attention, as potentially the most relevant of all for thriving; in particular, universal psychological needs, varying personality traits, varying goals and intentions, and varying self-images and self-concepts, were each the subject of a chapter. Each of these four aspects of personality will be considered in greater detail, below.

*The four tiers of personality*

The four aspects of personality depicted in the bottom four rows of Figure 1 are based on McAdams' (1995, 1996) proposals. McAdams argued that traits/dispositions, goals/motives, and selves/self-narratives are three distinct and important "tiers" of personality theory and organization. Each level addresses issues that the other levels do not. None of them are determined by the others, and thus information from each of the levels is necessary for a complete understanding of a person (i.e., motive effects upon behavior are more than mere trait and self-concept effects, self-concept effects are more than mere trait and motive effects, and so on). Furthermore, McAdams and Pals (2006) argued that the field of personality psychology is no longer well-served by attempts to reduce different aspects of personality to one another, instead calling for simultaneous and integrated consideration of all of them together. One goal of this research is to test McAdams' claim that constructs at these three levels of personality have effects that are independent and non-reducible to each other, by hypothesizing that they should all have simultaneous effects upon SWB.

The three levels identified by McAdams (1996) involve domains of individual difference. However, Sheldon (2004) argued that foundational and evolved (i.e. species-typical) human nature also needs to be considered for a complete picture (see McAdams and Pals, 2006, for related theorizing). What are the most basic personality processes upon which individual differences rest? In considering this bottom level Sheldon discussed

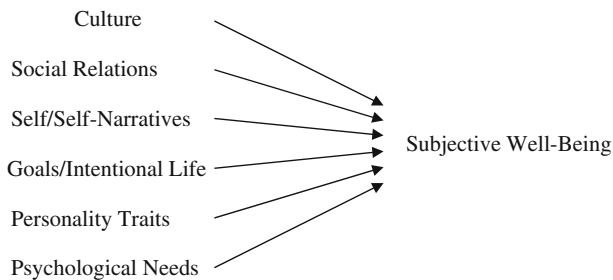


Figure 1. Six levels of the person relevant to optimal human being (Sheldon, 2004).

universal biophysical requirements, psychological needs, social-cognitive mechanisms, and socio-cultural practices – all thought to be inborn propensities that do not vary across individuals, although they may of course vary in their expression.

Notably, the four levels of personality presented at the bottom of Figure 1 do not necessarily form a functional hierarchy, as in Carver and Scheier's (1998) control theory model of personality. Thus, traits do not necessarily serve goals, goals do not necessarily serve self-concepts, and self-concepts do not necessarily serve social relations. Neither do the four levels represent a causal sequence, leading in domino sequence from low to high, or from high to low. Thus, for example, we would not expect goal effects to mediate self-effects, or self-effects to mediate social relation effects. Instead, the levels are merely viewed as distinct facets of the person, each of which contains information that cannot be gotten from the other facets (McAdams, 1996). Thus, the current research is simply an exploration of four important facets of personality, in conjunction with information concerning social and cultural contexts (see below), as predictors of a single construct, namely, SWB.

What personality constructs are most predictive of SWB? In reviewing the corresponding research literatures, Sheldon (2004) concluded that the highest degree of optimality or thriving may occur when a person: (a) experiences much satisfaction of basic psychological needs (at the species-typical or foundation level of personality), (b) evidences low levels of neuroticism and also high levels of other extraversion, agreeableness, conscientiousness, and perhaps openness (at the trait or dispositional level of personality), (c) achieves many of his/her personal goals, especially self-concordant personal goals (at the goal or intentional level of personality), and (d) feels much self-esteem and proximity to desired future selves (at the self and self-concept level of personality).

In the current research we simultaneously compared the associations of all of these constructs upon SWB. We did this in two steps: by first (a) comparing the relative efficacy of two or more candidate constructs *within* each conceptual level for predicting SWB, in order to select the strongest predictor to

represent that level of analysis, and then by (b) comparing *between* all of the thereby-designated predictors, one from each level, as simultaneous predictors of global concurrent SWB. Consistent with the “irreducibility hypothesis,” we expected that the best predictors within each level would uniquely predict SWB when pitted against the best predictors from the other levels.

Notably, our preliminary step of identifying two candidate predictors at each level and letting them compete for variance might capitalize unduly on chance, or upon data characteristics irrelevant to our conceptual purposes. Nevertheless we took such an approach in the current study, hoping to illustrate a method for beginning to consolidate and prioritize disparate constructs within personality psychology. Although the conclusion that “X is a better predictor of Y than Z” must be taken with caution within any particular study, over time, multiple researchers’ reports should cumulate to a clear understanding of the relative importance of various predictors. In short, making initially reasonable choices of constructs to examine, then following through with those comparisons, may ultimately be the best way to bring greater order to the “zoo” of partially overlapping predictors in personality psychology.

### *Two Higher Levels: Social Relations and Cultural Influences*

Again, Sheldon (2004) also considered two trans-personality levels of analysis, namely, social relations and culture (depicted in the top two levels of Figure 1). These higher levels of organization emerge from the interactions of multiple personalities, and contain information that goes beyond the properties of the constituent personalities. In order to evaluate the associations of the social relations level of analysis upon SWB, in the current studies we examined participants’ perceived social support and autonomy support. Of course, social support has long been known to be important for many kinds of psychological health and coping outcomes (Lakey and Lutz, 1996; Sarason et al., 2001). Similarly, the social-level factor of autonomy support, which is the extent that important others grant one choice and input rather than trying to coerce and control one, has been shown to be beneficial for outcomes as diverse as learning,

intrinsic motivation, creativity, mood, and psychological vitality (Deci and Ryan, 2000; Sheldon et al., 2004). Again, we first compared the predictive efficacy of these two variables, and then moved forward with the strongest predictor to the second, cross-level phase of the analysis.

“Culture” can be defined in terms of the shared norms, traditions, and values of a large group of interacting personalities that have emerged over time (Geertz, 1973). Of course, cultural syndromes can have important influence upon many different aspects of human behavior and experience (Markus et al., 1996). In order to address this top level of the Figure 1 model, we sampled participants in two very different cultures: The U.S. and Singapore. The U.S. is considered to be a prototypically individualist (i.e. modern and individual-centered) culture, whereas Singapore is considered to be a fairly collectivist (i.e., traditional and group-centered) culture (Diener et al., 1995; Triandis, 1997). Asian collectivist cultures typically evidence lower mean levels of well-being compared to western cultures, and Diener et al. (1995) showed specifically that national well-being in Singapore is considerably lower than national well-being in the U.S. Consistent with the irreducibility hypothesis and with past SWB findings (Diener et al., 1995), we expected that cultural group would have its own main effects upon SWB, independently of the other five predictors. Based on previous research on the inter-correlations of culture, personality, and well-being (Diener and Suh, 1999), cultural membership should still have an effect on SWB even after all of the lower-level effects have been accounted for.

To summarize, even though there is likely some empirical overlap between some of the constructs examined (i.e., competence need-satisfaction is likely correlated with goal progress, and so on), we expected that each identified construct would uniquely predict SWB, because each ultimately refers to a different level of organization within the human personality. To find support for this hypothesis would indicate that goal effects cannot be reduced to need effects, that trait effects cannot be reduced to goal effects, and so on; all of these perspectives will be required for a truly comprehensive model of personality and SWB.



*The Role of Inter-level Consistency*

Sheldon (2004) also suggested that SWB is affected not only by the *contents* of (or conditions within) the differing levels of the person, but also, by the *relations between* the levels of the person, independently of their contents. The implication is that one can have a good profile of characteristics at each level but still not achieve optimality because the different levels of oneself are not well-integrated (i.e., a conflicted young woman is pursuing positive goals and self-images that are nevertheless inconsistent with her also-positive traits and social relationships). Conversely, one can be well-integrated between levels, but still not thrive because of what the levels contain (i.e., a sociopath whose personality is well-organized nevertheless suffers because of his many negative personality characteristics). Ideally, one has both factors going for one; i.e., one is both “organismically” and “systemically” integrated (Sheldon and Kasser, 1995).

Thus, we asked participants to consider how each level of themselves (needs, traits, goals, selves, and social supports) relates to, or functions with respect to, each other level. We predicted that inter-level consistency would have its own independent main effect upon SWB, above the significant main effects of the predictors at each level of analysis. Again, this would support Sheldon’s (2004) contention that SWB is a combination of both the person’s profile of characteristics within the different levels of analysis, and, the degree of functional linkage between those levels.

## METHODS

### Participants and Procedure

Initial participants were 328 introductory psychology students at the University of Missouri (MU) and 237 introductory management students at the National University of Singapore (NUS).<sup>1</sup> Although NUS is somewhat more selective in its admission and is located in a larger urban center compared to MU, both universities are large public institutions that draw students from all over their respective nations. Also, both classes were large lecture topic-introductions, attracting a wide



variety of students from within each University. Thus, these convenience samples seemed reasonably representative of the two cultures from which they were drawn. Thirty-two participants (22 Americans and 10 Singaporeans) were dropped because there was missing data on at least one of the 15 primary study variables, resulting in a final N of 533 consisting of 306 Americans (114 men and 192 women) and 227 Singaporeans (133 men and 94 women). Because of the differing gender proportions within the two samples, gender will be co-varied out of the primary models below.

U.S. participants completed the survey using a web-based format, and Singaporean participants completed the survey in group testing sessions using a paper-and-pencil format. Although web-based survey methodologies are still relatively new, initial research indicates that data from such surveys are largely equivalent to paper-and-pencil data (Birnbaum, 2000; Stanton, 1998). Both surveys were administered in English, which is the official language of instruction at NUS. The measures were all presented in the same order to Singaporean participants: First, the SWB measures (i.e. the “dependent measures”) were presented, followed by the need-satisfaction measures, the personality trait measures, the goal measures, the self-measures, and finally the social support measures. Thus, following SWB the order of presentation of the predictor variables moved from low to high in the Figure 1 hierarchy. Approximately half of the U.S. participants also received the measures in this order, and the other half first rated SWB and then rated the predictor variables moving from high to low in the Figure 1 hierarchy. Although it had some main effects, order of measures did not interact with the primary results, below, and will not be considered further.

## **Measures**

### *SWB*

SWB was measured by summing positive affect and life-satisfaction and subtracting negative affect (Diener, 1994; see Sheldon and Elliot, 1999, Sheldon and Kasser, 2001, 2004; Sheldon et al., 2004). The SWB questions were framed in terms of “how

much you feel this way, in general in your life,” and administered with a 1 (not at all) to 5 (extremely) scale. Affect was measured via the 20-item Positive affect/negative affect scale (PANAS; Watson et al., 1988); items include “interested,” “nervous,” “attentive,” and “upset.” Coefficient alpha for positive and negative affect were 0.75 and 0.81, respectively (0.64 and 0.88 in the U.S. sample, and 0.79 and 0.84 in the Singaporean sample). Life-satisfaction was measured via the 5-item Satisfaction with Life Scale (Diener et al., 1985), using the same scale; an example item is “in most ways, my life is close to my ideal” (alpha = 0.86; 0.85 and 0.83 in the U.S. and Singapore). Supporting the validity of combining the three variables, principal component analysis showed that positive affect, negative affect (recoded) and life-satisfaction loaded on a single factor accounting for 54% of the variance (loadings = 0.77, 0.62, and 0.81, respectively). Coefficient alpha for the 25-item SWB variable was 0.89.

### *Need-satisfaction*

As one way of assessing psychological need-satisfaction we employed the Basic Psychological Needs scale (BPNS; Deci et al., 2001). This 21-item scale assesses the extent to which participants feel autonomy, competence, and relatedness, the three primary psychological needs postulated by self-determination theory (Deci and Ryan, 2000). The scale contains items such as “I feel free to express my ideas and opinions” (autonomy), “Most days, I feel a sense of accomplishment from what I do” (competence), and “people in my life care about me” (relatedness). In addition, we employed the 9-item need-satisfaction scale used by Sheldon et al. (2001) in their study of “most satisfying events” (MSEs). This scale also assesses autonomy, competence, and relatedness, via items similar to the BPNS. Both scales addressed “life in general.” Aggregate autonomy, competence, and relatedness measures were computed by standardizing and averaging the two measures of each construct (alphas = 0.73, 0.79, and 0.74, respectively, for the whole sample; for the U.S. sample, alphas were 0.76, 0.77, and 0.73, and for the Singaporean sample, alphas were 0.69, 0.73, and 0.72).

### *Personality Traits*

Participants were administered two short Big Five measures. One was the Gosling et al. (2003) Ten Item Personality Measure (TIPI), which presents participants with ten pairs of synonymous traits (i.e., “extraverted, enthusiastic” and “sympathetic, warm”) and asks them to rate how well the pair applies personally, using a 1 (disagree strongly) to 7 (agree strongly) scale. Two pairs assess each of the Big Five traits, one containing two directly worded traits and the other two oppositely-worded items. The other short Big Five measure was the set of 15 single trait adjectives (referred to as the STA measure), three for each of the 5 five traits, that was used by Sheldon et al. (1997; example adjectives are “orderly,” “talkative,” and “curious”). This measure was also administered with a 7-point scale. Aggregate extraversion, neuroticism, conscientiousness, agreeableness, and openness measures were computed by standardizing and averaging the two measures of each construct (all alphas were 0.75 or more for the full sample and both sub-samples, except for agreeableness, with alphas of 0.66 in the full sample and 0.62 and 0.69 in the sub-samples).

### *Goals and Intentions*

Positive goal conditions were measured in two ways: by assessing the self-concordance of personal goals (i.e., the extent personal goals are motivated by interests and identifications rather than by internal and external pressures; Sheldon, 2004, Sheldon and Elliot, 1999), and by assessing the participant’s success in achieving those goals. For U.S. participants these ratings were based on a single important self-generated personal goal towards which the participant is striving, and for Singaporean participants these ratings were based on four self-generated personal goals (Emmons, 1999). To assess self-concordance, participants rated why they strive, in terms of four reasons: external (because I have to or my situation demands it), introjected (because I’d feel guilty, anxious, or ashamed if I didn’t), identified (because I identify with it, even when its not fun and enjoyable), and intrinsic (because it is intrinsically interesting or challenging). As in past research (Sheldon and Elliot, 1999; Sheldon

and Kasser, 1995, 2001), a single self-concordance score was computed by summing the intrinsic and identified ratings and subtracting the external and introjected ratings (see Sheldon, 2004, for more discussion of the self-concordance construct). To assess success at goals, participants rated “how well I have done in the past,” using a 1 (not at all) to 5 (very much) scale. These ratings constituted the goal-progress variable. Singaporean success ratings were averaged over the four goals ( $\alpha = 0.56$ ); reliabilities were not computed for the goal variables because the U.S. measure was based on only one goal.

### *Self and Self-feelings*

To assess positive conditions at the self-level of personality, we employed two measures. The first was the 10-item Rosenberg self-esteem measure (Rosenberg, 1965), which contains items such as “I take a positive attitude toward myself.” A 7-point scale was used for this measure ( $\alpha = 0.90$ ; 0.83 and 0.92 in the U.S. and Singapore, respectively). The second measure was based on an assessment of participants’ “possible selves” (Markus and Ruvolo, 1989). All participants first wrote (or typed) a most desired future possible self (i.e., “an image of yourself in the best possible future”) and a most feared future possible self (i.e., “an image of yourself in the worst possible future”). Participants then rated “how close are you already to each possible self,” “how likely is it that each self will come to be,” and “to what extent do you feel that you can control whether or not you will become each possible self?” using 1 (not very) to 5 (extremely) scales. Preliminary analyses revealed that the ability to control becoming the feared self was uncorrelated with the other five ratings in both samples, thus this item was excluded. After recoding the two remaining feared possible self-ratings, a “positive possible self” variable was created for each participant by averaging the five ratings ( $\alpha = 0.68$ ; 0.65 and 0.72 in the U.S. and Singapore, respectively).

### *Social Support*

To assess positive conditions at the social relations (or interpersonal) level of analysis, we also used two measures. One was based on the Sarason et al. (1987) brief social support measure.

Specifically, participants rated how satisfied they are with their overall social support regarding six issues, using a 1 (very dissatisfied) to 5 (very satisfied) scale. The six issues included items such as having “People who can distract you from your worries when you feel under stress” and having “People who care about you, regardless of what is happening to you.” The six responses were averaged to form a “social support” composite ( $\alpha = 0.90$ ;  $0.92$  and  $0.88$  in the U.S. and Singapore, respectively). The second measure was based on the six-item version of the perceived autonomy support scale (Black and Deci, 2000; Williams et al., 1999), which assesses the extent to which authorities and other important persons support the participant’s right to make their own choices. It contains items such as “this person listens to how I would like to do things” and “this person provides me with choices and options.” In the U.S. sample, participants responded with respect to mother, father, and one other influential older adult. In the Singapore sample, participants responded with respect to “two important people who are most involved in your life.” A five-point scale was employed. An aggregate “autonomy-support” score was computed by averaging across the six items and persons rated ( $\alpha$ s =  $0.91$  in both samples).

### *Culture*

The effects of cultural membership were assessed using a dummy variable coded 0 (U.S.) or 1 (Singapore). Notably, our only explicit prediction regarding culture was that Singaporean cultural membership would have a negative main effect upon SWB, which would persist with the other predictors in the equation. However, we also examined the data for other informative patterns consistent with the literature. In addition to being lower on SWB, it seemed likely that Singaporean participants would also evidence lower means on at least some of the predictor variables, particularly need-satisfaction (Sheldon et al., 2001), self-esteem (Heine et al., 2001), and goal self-concordance and progress (Oishi and Diener, 2001).

Beyond mean differences, a potentially more important issue for our theoretical approach was, “should cultural membership interact with any of the predictors in relation to SWB?” At first

glance it seems that a universalist perspective would say “no;” however a more differentiated view suggests that different constructs at a particular level of analysis (i.e., self-esteem versus achieved ego-identity, at the self-level of analysis, or conscientiousness versus agreeableness, at the trait level of analysis) might well have different sized (but still significant) effects within different cultures, without invalidating the universalist argument that self-level constructs matter within every culture. Based on past research, it seemed possible that self-esteem (Diener et al., 2003) and goal self-concordance and progress (Oishi and Diener, 2001) would have different effects upon SWB in the U.S. versus Singapore. However, because some other studies have not found such differences (Sheldon et al., 2001, 2004), we had no firm expectations concerning culture x predictor interactions.

#### *Inter-level Consistency*

Six items were used in order to assess the inter-level consistency of the various aspects of the person. First, participants were presented with brief definitions of traits, goals, selves, and immediate social environment (i.e., “traits” were defined as “your habitual ways of acting and reacting in the world,” “goals” were defined as “your conscious values, purposes, and objectives,” “selves” were defined as “the dominant self-images and self-concepts you live inside,” and “social environment” was defined as “your primary social relationships and social network”). Participants then rated “whether each area of your life is consistent or inconsistent with each of the other areas. Does each particular area of your life, taken as a whole, tend to harmonize with, or conflict with, each other area?” The areas were juxtaposed two at a time, resulting in six items; the scale was 1 (“very different or inconsistent”) to 5 (“very similar or consistent”). The items were averaged to create an “inter-level consistency” variable ( $\alpha = 0.82$ ; 0.84 and 0.80 in the U.S. and Singapore, respectively). Notably, we did not ask participants to rate the consistency of the various parts of themselves with foundational psychological needs, because these needs are assumed not to vary across individuals.

## RESULTS

### Analysis Plan

After presenting descriptive statistics and preliminary correlational and factor analyses, we first compare the candidate constructs *within* each level as predictors of SWB. That is, at the organismic needs level, which is the strongest predictor – autonomy, competence, or relatedness need-satisfaction? At the trait level, does neuroticism, extraversion, agreeableness, openness, or conscientiousness best predict? Also, does progress or self-concordance best predict at the goal level, does self-esteem or having a positive possible self best predict at the self-level, and does general social support or autonomy support best predict at the social relations level? After identifying the best predictor at each level, we then proceed to compare the “winners” as simultaneous predictors of the SWB criterion. Finally, we examine the effects of the inter-level consistency variable, and consider potential interactions.

### Preliminary Analyses

Table I contains descriptive statistics for the major study variables, and also presents variable means split by sample. As can be seen, the Singaporean sample was significantly lower on every variable except perceived autonomy-support and neuroticism. Notably, the cultural mean differences in SWB, need-satisfaction, and self-esteem are consistent with previous published research (i.e., Diener et al., 1995, 2003; Heine et al., 2001; Sheldon et al., 2001) and with current study hypotheses.

As a second preliminary analysis we computed the correlations between the major study variables (not tabled). Two patterns were noteworthy. The first concerns the correlations between the 14 predictors and SWB – all 14 correlations were positive (all  $r_s \geq 0.20$ , 12  $r_s > 0.40$ ) and significant (all  $p_s < 0.01$ ). Thus, the assumption that all of these predictors should have relevance for SWB (Sheldon, 2004) received preliminary support. The second pattern concerns the 91 correlations among the 14 predictors. These correlations were also



TABLE I  
Descriptive statistics for major study variables

	Entire sample		U.S. sample	Singaporean sample
	Mean	S.D.	Mean	Mean
SWB	4.74	1.50	5.07	4.29
Autonomy needsat	3.68	.58	3.80	3.50
Competence needsat	3.64	.66	3.77	3.46
Relatedness needsat	3.97	.64	4.12	3.77
Neuroticism	3.30	1.07	3.34	3.27
Extraversion	4.76	1.20	4.90	4.58
Agreeableness	5.21	.84	5.36	5.02
Conscientiousness	5.25	1.13	5.08	5.38
Openness	5.09	.99	4.92	5.21
Self-concordance	2.65	2.81	2.98	2.20
Goal-progress	3.90	.71	4.74	3.28
Self-esteem	5.26	1.06	5.39	5.09
Positive possible self	1.21	1.09	1.97	1.56
Social support	4.15	.75	4.26	4.00
Autonomy support	4.04	.66	4.07	4.01
Inter-level consistency	3.80	.62	3.90	3.67

*Note.* All U.S./Singapore means are significantly different at the 0.01 level or greater, with the exception of autonomy-support and neuroticism.

uniformly positive and mostly significant, suggesting considerable common variance among them.

To evaluate the nature of this overlap, we conducted a principal components analysis of the 14 predictors. Three components with eigenvalues greater than one emerged. After varimax rotation, the first factor was defined by the three need-satisfaction variables, by extraversion, conscientiousness, and neuroticism (reversed), and by self-esteem, goal-progress, and having a positive possible self. Relatedness need-satisfaction cross-loaded on the second factor, which was also loaded upon by agreeableness, social support, and autonomy-support. The third factor was defined by goal self-concordance and openness to experience. The second factor might be interpreted as a “positive sociality” factor and the third factor might be interpreted as a “growth orientation” factor. The first factor is broader,

and may represent a group of personality factors that have relevance to positive disposition, optimism, and well-being. Notably, essentially the same factor structure emerged when an oblique rotation was employed, thus we do not present this oblique solution.

### **Identifying the Best Predictor at Each Level**

To evaluate the relative strength of the candidate predictors at each of the five conceptually derived levels of personality, we conducted five analyses in which SWB was regressed upon the predictors at each level. In the need-satisfaction analysis, competence satisfaction was the strongest predictor ( $\beta = 0.45$ ,  $p < 0.01$ ); relatedness ( $\beta = 0.26$ ,  $p < 0.01$ ) and autonomy ( $\beta = 0.15$ ,  $p < 0.01$ ) were also significant, replicating past studies of the simultaneous effects of the three needs (Sheldon et al., 2001). In the trait analysis, neuroticism was the strongest predictor ( $\beta = -0.43$ ,  $p < 0.01$ ); extraversion ( $\beta = 0.20$ ,  $p < 0.01$ ), conscientiousness ( $\beta = 0.21$ ,  $p < 0.01$ ), agreeableness ( $\beta = 0.15$ ,  $p < 0.01$ ), and openness ( $\beta = 0.07$ ,  $p < 0.05$ ) were also significant, consistent with Sheldon's (2004; p. 186) suggestion that all five traits have relations with SWB. In the goals analysis, progress ( $\beta = 0.43$ ,  $p < 0.01$ ) and self-concordance ( $\beta = 0.16$ ,  $p < 0.01$ ) were both significant, consistent with prior goal research (Sheldon and Elliot, 1999; Sheldon and Houser-Marko, 2001). In the self-analysis, self-esteem ( $\beta = 0.60$ ,  $p < 0.01$ ) and positive possible self ( $\beta = 0.22$ ,  $p < 0.01$ ) were both significant, and in the social relations analysis, social support ( $\beta = 0.40$ ,  $p < 0.01$ ) and autonomy support ( $\beta = 0.24$ ,  $p < 0.01$ ) were both significant. The latter two sets of results are also consistent with prior findings in the literature.

### **Primary Analysis**

In sum, the analyses above suggest that high competence need-satisfaction, low neuroticism, good goal progress, high self-esteem, and high social support, are the best predictors

within each level. To test the hypothesis that each would uniquely predict SWB, we next conducted a hierarchical regression analysis. Cultural membership was entered at step 1, and gender at step 2, to ensure that any culture differences are not due to the differing gender compositions in the two samples. The five conceptual predictors were then entered as a block at step 3, followed by the inter-level consistency measure at step 4. Table II contains the results of the analysis. As can be seen, cultural membership was significant at step 1, an effect which remained significant when gender was controlled at step 2 (gender itself was non-significant). More importantly, all five primary predictors were significant at step 3, uniquely predicting SWB. Finally, at step 4, the inter-level consistency measure was also significant. Notably, all of the earlier predictors remained significant also at step 4. The total variance ( $R^2$ ) accounted for at step 4 was 0.691, and the  $R^2$  for the number of independent variables in the equation was 0.687.

TABLE II  
Hierarchical regressions predicting SWB

Predictor variables	Entire sample		U.S. sample	Singaporean sample
	$\beta$	$\Delta R^2$		
Step 1		0.07**		
Cultural membership	-0.26**			
Step 2		0.002		
Cultural membership	-0.25**			
Gender	0.05			
Step 3		0.62**		
Cultural membership	-0.09**			
Gender	0.07**		0.08*	0.05
Competence needsat	0.30**		0.28**	0.28**
Neuroticism	-0.27**		-0.34**	-0.15**
Goal progress	0.08**		0.08*	0.05
Self-esteem	0.23**		0.18**	0.33**
Social support	0.16**		0.14**	0.18**
Step 4		0.01**		
Inter-level consistency	0.09**		0.07***	0.13**

Note. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.10$ .

## Supplementary Analyses

### *Omitting the Winnowing Step*

We further considered the possibility of entering all 14 initial predictors into the equation at the same time. We found that neither autonomy nor relatedness need-satisfaction was significant, nor were extraversion, openness, nor conscientiousness. However, agreeableness, goal self-concordance, positive possible self, and autonomy support all made significant contributions, suggesting that the potential positive benefits of the trait, goal, self, and social relations levels are not exhausted by the single representative construct used. Still, the additional variance explained by adding these four constructs was quite modest ( $R^2 = 0.71$  vs.  $0.69$  in the primary model), suggesting that not much was missed by omitting them. Also worthy of note, inter-level consistency remained significant in the 14-predictor analysis.

### *Culture by Predictor Interactions*

Table II also contains the coefficients that emerged when the analysis was conducted in each country separately. As can be seen, some of the coefficients varied somewhat between the two samples. However, a supplementary analysis entering interaction product terms at a fifth step of the primary regression analysis revealed that there was only one significant culture  $\times$  predictor interaction: as can be seen in Table II, the negative association of neuroticism with SWB was somewhat smaller in the Singaporean than the U.S. sample ( $p < 0.01$ ). We do not attempt to interpret this potentially chance finding.

### *Predictor by Predictor Interactions*

Further supplementary analyses also examined predictor  $\times$  predictor interactions. For example, might the combination of high goal progress and high self-esteem be especially beneficial? All possible pairings of the five primary predictors yielded 10 interaction product terms, which were employed in a repetition of the Table II analysis in which the product terms were entered at a fifth step. However, only one of these 10 effects was significant (namely, the neuroticism  $\times$  self-esteem coefficient was

significant and negative, suggesting that self-esteem is less beneficial when combined with high neuroticism). Overall, however, it appears that the effects of particular constructs do not depend on constructs at the other levels of analysis.

## DISCUSSION

Despite the huge volume of research on SWB that has appeared in the two decades since Diener's (1984) landmark *Psychological Bulletin* article, there have been few attempts to consider many possible determinants of SWB simultaneously. This has left the field in some disarray. How do the large number of constructs and predictors thus far examined relate to each other, relate to SWB itself, and/or moderate each other's influence upon SWB? Does any research area, or type of construct, have the "inside track" to explaining what makes for a happy person? Might some levels of analysis or types of constructs be eliminated as non-essential, or be subsumed by other levels of analysis or types of construct? Questions such as these must be addressed if we are ever to approach an integrated yet parsimonious understanding of human thriving (Staats, 1999).

In the current studies we began to address such questions, applying the 6-level model of person-in-context proposed by Sheldon (2004). As depicted in Figure 1, this model asserts that optimality (here, SWB) is multiply determined, by factors at many different levels of the person ranging from biological to cultural. In particular, the model distinguishes between four potentially hierarchical aspects of personality (needs, traits, goals, and selves) and two higher levels of organization within which personality is embedded (the relations between personalities, and membership within a culture; see also McAdams and Pals, 2006). Furthermore, the model asserts that all of these levels should have relevance for understanding SWB – none of them are reducible to each other.

The model led us to the testable hypothesis that representative constructs at each level of analysis would uniquely explain SWB. In a preliminary step, the most effective predictor of SWB was identified at the lower five levels of Figure 1: namely,

competence need-satisfaction, low neuroticism, good goal-progress, positive self-esteem, and ample social support. In a second and more important step, these five predictors were entered into a competition to predict SWB, along with a sixth factor of cultural membership (U.S. vs. Singapore), along with a measure of inter-level consistency. All of these measures had significant influence; despite the fact that the predictor variables were positively correlated, they nevertheless could each tell us something about SWB that the other variables could not, consistent with McAdams' (1996, 2000, 2006) and Sheldon's (2004) claims regarding the irreducibility of each tier of personality. Thus, for example, the effects of self-level variables cannot be accounted for just by measuring personality traits, goal attainments, need-satisfaction, social relations, and cultural memberships; self-level measures are necessary for a complete picture. The same is true for the other levels.

As expected, the cultural membership effect also remained significant at the last step of the analysis, although its effects were significantly weakened. This finding suggests that culture has irreducible top-down effects upon its members, effects that cannot be completely accounted for by the important personality-level constructs that we examined. It also suggests that east/west cultural differences in SWB represent more than mere response biases, modesty norms, or scale usage differences, since the effects of such differences upon self-report SWB should have been accounted for by the inclusion of so many other self-report measures in the equation. Notably, Diener and Suh (1999) have also argued that cross-cultural differences in the desirability and familiarity of SWB constructs do not account for national differences in SWB.

Another finding worthy of comment is that a measure of inter-level consistency had independent effects upon SWB. This supports the idea that the overall self-consistency (or functional integrity) of a person's multi-level system has an influence upon his or her SWB, beyond the effects of positive conditions at each level considered separately (Sheldon and Kasser, 1995). This result implies that no matter how positive a person's characteristics, he or she will be even better off if those characteristics

are also functionally consistent (i.e., if the formerly conflicted young woman manages to get her positive traits and goals lined up with her positive self-image and social supports). Conversely, having a consistent and coherent system may be less beneficial if the contents that are being integrated are themselves sub-optimal (i.e., the afore-mentioned highly integrated sociopath).

The current results have potentially important implications for SWB and positive psychological interventions (Joseph and Linley, 2004; Ruini and Fava, 2004). Specifically, they suggest that many levels of the person should be targeted, for maximal effect. Of course, some characteristics may be more modifiable than others. For example, the big five traits may be least susceptible to alteration via interventions, whereas psychological need-satisfaction (i.e., feelings of autonomy, competence, and relatedness in one's daily life) may be more readily modified. Similarly, social supports may be more readily alterable than cultural membership. Another caveat to the "target every level" conclusion is that it may be pragmatically unfeasible to try to change all aspects of a person at once.

Fortunately, effecting change at just one or two levels of a person may often be enough to create cascading positive effects upon other levels of that person. For example, Deci and Ryan (2000) proposed that when psychological needs are satisfied (at the organismic level of personality), people gain the internal resources to make positive changes of many different kinds. Obviously, more research is needed to test the intriguing idea that some levels of personality offer more tractable intervention-targets than others, and the further idea that influencing only one or two levels may sometimes be enough to bring about positive change at other levels.

### **Limitations**

The studies reported herein have a number of limitations. First, only two cultural groups were examined, one representing individualistic and the other collectivistic cultures. It would be useful to generalize the results to other exemplars of these groups, to further affirm that (a) important constructs at each level of analysis have main effects within every culture, and that



(b) cultural membership itself continues to have effects even after lower-level predictors are accounted for. Relatedly, our measures were all “western” in focus, representing prominent constructs that have been researched within the American and European traditions. It would be advantageous to employ alternative measures of SWB which take into account possible differences in the meaning and construction of happiness in different cultures (Diener and Suh, 1999). Another limitation is that only a few constructs were employed at each level of analysis, in some ways confounding construct content with construct level; also, in some cases, shortened measures of these constructs were employed. Thus, future research will be required to more confidently identify the most efficacious predictors at each level, and to confirm that their effects hold up to the most-efficacious predictors at other levels. Finally, all constructs were measured by self-report, raising the possibility that common method variance is playing an inordinantly strong role. However, we felt it worthwhile to begin this new type of inquiry using the typical self-report scales employed by researchers within each “level.” Still, future research should seek to tap alternative sources of information beyond self-report.

## CONCLUSION

These data support the six-level model of optimal human being presented in Figure 1 (Sheldon, 2004), showing that positive need-satisfaction, personality traits, personal goals, self-evaluations, social supports, and cultural membership all make unique contributions to SWB. It appears that none of these effects are reducible to the other effects, just as proponents of the constructs typically assume (McAdams and Pals, 2006). The data also indicate that the degree of consistency between the different levels of a person makes a difference for SWB, independently of the contents of each level. Thus, we suggest that the model may provide a useful tool for integrating across theories of personality and social structure, as well as for integrating across diverse theories of SWB.

## NOTE

<sup>1</sup> A portion of this dataset was used by Sheldon and Niemiec (2006). However, none of the relations in this article have been reported before.

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Address for correspondence:  
KEN SHELDON  
*Psychological Sciences*  
*University of Missouri-Columbia*  
*McAlester Hall, Columbia, MO, 65211,*  
*USA*

*E-mail: sheldonk@missouri.edu*