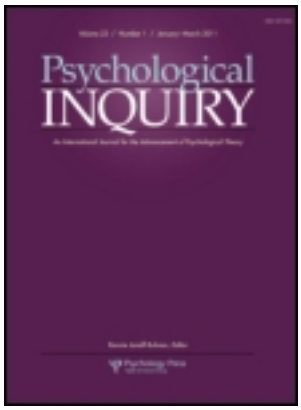

Psychological Inquiry: An International Journal for the Advancement of Psychological Theory

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/hpli20

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Available online: 03 Mar 2011

To cite this article: Kennon M. Sheldon, Cecilia Cheng & Jonathan Hilpert (2011): Understanding Well-Being and Optimal Functioning: Applying the Multilevel Personality in Context (MPIC) Model, Psychological Inquiry: An International Journal for the Advancement of Psychological Theory, 22:1, 1-16

To link to this article: http://dx.doi.org/10.1080/1047840X.2011.532477

Psychological Inquiry, 22: 1–16, 2011

ISSN: 1047-840X print / 1532-7965 online
DOI: 10.1080/1047840X.2011.532477

Psychology Press
Taylor & Francis Group

TARGET ARTICLE

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In this article we first describe a broad multilevel framework representing the determinants of human behavior and consider its advantages. Expanding on the upper part of this framework, we then propose the Multilevel Personality in Context (MPIC) model, showing how it integrates and extends past theorizing on the hierarchical organization of personality. The model builds upon McAdams's three-tier (traits, goals, and selves) conception of personality, adding a foundational level (psychological needs) beneath individual differences and incorporating social relations and cultural factors as higher level influences upon behavior and individual differences. New data ($N = 3{,}665$ in 21 cultures) are briefly presented showing that culture, self, motive, and trait variables each have independent effects upon subjective well-being (SWB) and showing that psychological need satisfaction (at the foundational level) mediates these effects as predicted. Consistent with McAdams and Pals's (2006) "fifth principle" of personality, culture had top-down effects upon self-level variables and moderated several of the relations to SWB. We conclude by suggesting some general heuristics for designing studies using the MPIC approach.

What determines positive mood, life-satisfaction, and happiness, that is, subjective well-being (SWB)? This is a question of increasing importance in health, personality, and positive psychology. Literally thousands of studies have addressed the question, identifying a plethora of correlates of satisfaction, health, and positive emotional outcomes of many types. Indeed, it is easy to become bewildered when considering the wide variety of theoretical perspectives upon, and empirical findings regarding, SWB! This is because SWB has been found to be associated with genetic, molecular, biological, neuronal, cognitive, personality, interpersonal, and cultural factors, as well as by interactions between these factors (Kahneman, Diener, & Schwarz, 1999). How might all of these relevant ideas and phenomena be organized into a single "seamless web of understanding," as in E. O. Wilson's (1998) call for greater "consilience" between the different scientific disciplines, including psychology? In other words, if we assume that reality is indeed a single and ultimately unitary phenomenon as Wilson proposes, then how can processes at all scales and levels of analysis be considered or represented simultaneously?

To help address this issue, Sheldon (2004) proposed a multilevel perspective upon the causal influences that affect human behavior and experience (including the experience of SWB), ranging from atomic up to molecular to biological to neuronal to cognitive to personal to contextual to cultural. The framework depicted in Figure 1, which in our view merely formalizes what most scientists already implicitly assume, tries to incorporate all of the basic levels or types of causal influence upon human behavior while also representing the possible cross-level interactions among these different levels of organization. According to the framework, human beings contain and are contained within a multilevel hierarchy of processes occurring at different scales and levels of analysis. Each type of process runs

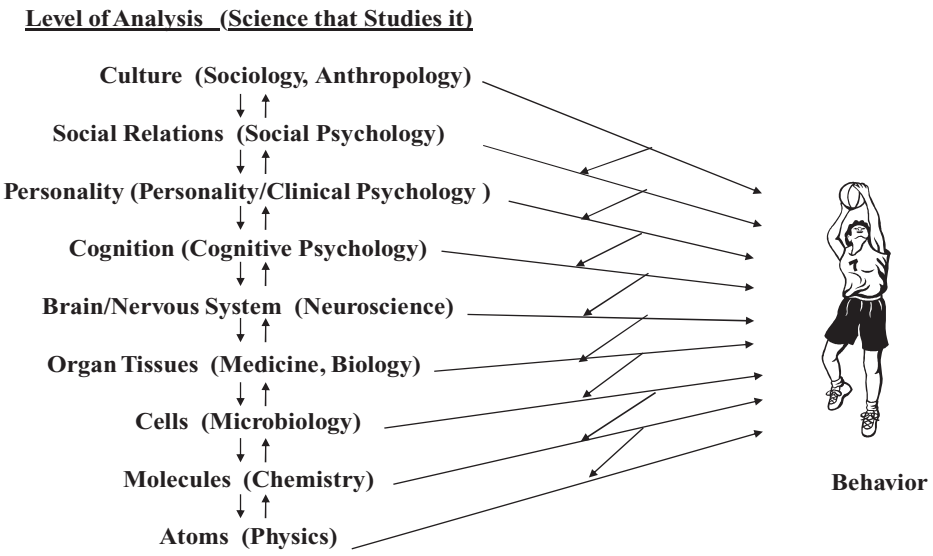

Figure 1. A multilevel perspective upon the organization of behavior.

off at its own level, but each type of process at times influences, or is influenced by, processes at other levels of the hierarchy.

As illustrated in Figure 1, atomic processes, which take place at the bottom level of the model, of course constitute the building blocks upon which everything else is constructed. However, atomic processes are entrained within higher order aggregates (molecules) that interact amongst themselves at this new level of complexity, according to partially independent laws. In other words, chemical processes emerge from atomic processes as a higher level of organization that, although it is constrained and constituted by atomic-level processes, nevertheless has some degree of independence from them. Furthermore, chemical processes can reach back down to influence or organize the atomic level, such that a new molecular compound or chemical phase change can in turn affect what is happening at the atomic level. This implies that, ultimately, both physics and chemistry are necessary sciences; chemistry cannot be reduced to physics, because knowledge is needed regarding laws and patterns at both levels.

The process of higher order emergence continues up the line, such that cells emerge as aggregates of molecular processes, which can reach back down to organize molecular processes (i.e., via diffusion); organ tissues (skin, liver, bone) emerge as aggregates of cellular processes, which can reach back down to organize cellular processes (i.e., neighboring cells cooperate); nervous tissue emerges as a special type of organ tissue, which can reach back down to organize organic processes (i.e., glucose regulation); cognitive processes emerge as an aggregate of neuronal processes, which can reach back down to organize nervous tissue (i.e., recruiting neurons); and so on, up to the very top level, at which cultural patterns emerge over time from the interactions of regionally bound personalities, which can reach back down to organize those interactions (i.e., influence by cultural norms). All of these processes are running off simultaneously, all up and down the hierarchy of activity.

Noteworthy features of the model include that fact that it addresses the brain–mind boundary, by specifying that cognitive (information) processes are simply the emergent products of nervous tissue processes. Higher levels of organization are naturally more complex and information rich, and in this light, the leap from complex brain functioning to complex cognitive functioning (the latter built on the former) is not so large and mysterious. The model also addresses the mind/consciousness boundary, by specifying that personality (and thus self) processes are simply the emergent products of certain cognitive processes (Sperry, 1988). Cognitive processes containing the property of self-reference are naturally suited for the adaptive tasks of self-representation and self-regulation within the informational world. Finally, the model addresses the person/cultural context boundary, by specifying that cultural traditions and histories emerge over time from the long-term interactions of personalities within a geographically bounded region (Triandis, 1995). Although cultural patterns (i.e., norms of deference vs. assertion, or dependence vs. interdependence) are constituted and constrained by relationship processes, just as molecular processes are constituted and constrained by atomic processes, once again, the higher level of organization can reach back down to influence its constituent parts. The hope is that the framework contains and acknowledges all of the major categories of influence relevant to understanding human behavior and experience, so that these can begin to be considered simultaneously.

Consider a person who makes a large donation to a social organization. How do we explain this behavior of this human being? In fact, we could venture explanations from any or all levels of the Figure 1 hierarchy. Starting near the bottom, we might say that the behavior was caused by evolved tendencies toward altruism implanted within the human genome by natural selection (molecular level); by the levels of certain neurotransmitters within this person's brain at the time he or she made the decision to donate (brain/nervous system level); by his or her implicit calculation of a positive benefit-to-cost ratio or utility function for the decision (cognition level); by his or her personality traits or current goals, motives, and self-images (personality level); by the types of social relationships or social groups in which he or she is embedded (social interaction level); or even by the subculture or society in which he or she is embedded, which promotes or discourages such donations, in general (culture level).

Obviously this is a very broad assortment of possible explanations for the behavior, all of which are viewed as legitimate and even primary by at least one scientific discipline. One objective of Figure 1 is simply to provide a tool for locating these different types of explanation within a single overarching framework. As can be seen, each level of organization is associated with a particular scientific discipline that has developed to focus on that level of analysis, each of which contains a vocabulary of theories and concepts as well as an assortment of methodological tools and procedures.

A second objective of Figure 1 is to illustrate that hierarchical pluralism is likely necessary to fully understand behavior. Each level of organization has its own irreducible laws, processes, and effects upon behavior, and thus it will usually be impossible to fully explain a behavior with reference to only one or two levels of organization (Sternberg & Grigorenko, 2001). Some levels may be more centrally relevant for explaining some kinds of phenomena than others (i.e., biological explanations may primarily explain a trip to refrigerator, whereas personality explanations may primarily explain a trip to the psychiatrist). Even in these cases, however, the other levels remain potentially relevant; personality (and cognitive and interpersonal processes) may also help explain why a person goes to the grocery store, and biology (and cognitive and interpersonal processes) may also explain why a person needs to see a psychiatrist. Thus, no scientific discipline, including the more physically or biologically oriented ones, is likely to subsume the others; all are needed. Sheldon (2004) referred to this as the "irreducibility" postulate.

A third objective of Figure 1 is to represent the fact that the causal processes behind behavior can flow in different directions, that is, from top to bottom or from bottom to top. In terms of the "donor" example, and illustrating the top-down case, the donor's culture can have influenced the nature of that person's social relations, thereby influencing the character of his or her personality and values, thereby enhancing the likelihood of that person's making the donation compared to members of other cultures. In the bottom-up case, the person's particular genetic makeup may be influencing his or her hormonal state, which in turn influences his or her calculations of cognitive utility, thereby enhancing the likelihood of the donation compared to persons with other genetic makeups. There can also be many cross-level interactions; for example, the personality style of neuroticism might moderate the effects of particular cognitions ("what if something goes wrong?") upon lower level cortisol/stress reactions, and the cultural style of collectivism might moderate the effects of particular interaction patterns (making self-enhancing vs. self-deferential statements) upon the outcomes of the personalities nested within the interactions.

Finally, the Figure 1 framework allows for comparison of reductionistic versus holistic explanatory perspectives, an important dichotomy within scientific theorizing (Koestler & Smythies, 1969). In terms of Figure 1, holism involves going "up" in the hierarchy, to draw upon higher level or contextual factors that directly affect, or moderate lower effects upon, the phenomenon of interest. One explains in terms of what the phenomenon is part of. In contrast, reductionism involves going "down" in the hierarchy, to draw upon lower level or more molecular factors that account for or mediate higher level effects upon the phenomenon. One explains in terms of the constituent parts of the phenomenon. Based on the concept of hierarchical pluralism, we contend that both holism and reductionism are needed for full explanation. Thus, to understand why a particular person in the world donates, we need to understand the lower level systems embedded inside that person, the higher level systems in which that person is embedded, and the many possible interactions between these systems.

As this indicates, reductionism, although it has paid huge dividends in science, can never finally win, precisely because of the phenomenon of emergence. Thus, neuroscientists will always need cognitive psychologists to tell them what higher order patterns or processes may be influencing brain data, and cognitive psychologists will always need personality psychologists to tell them what higher order needs or motives may be influencing cognitive data. What does it mean to say a phenomenon or level of organization "emerges" from the level below? This remains a very difficult issue in the philosophy of science, with various distinctions proposed between strong versus weak emergence, synergistic versus combinatorial emergence, and more (Anderson, 1972; Corning, 2002; Laughlin, 2005). However, one simple way to view the matter results from the fact that different time scales are operative at different levels, such that processes and changes occur more slowly at each subsequent level.

Thus, atomic processes occur faster than molecular processes, which occur faster than tissue processes, and so on, with cultural patterns (at the top) being the slowest to change of all. In such an arrangement, the necessary precondition of lower levels of organization for higher levels become clear (i.e., countless interactions between people occurring over time are needed to establish culture), but the potential top-down influence of higher levels also becomes apparent (i.e., cultural norms influence the development of personalities within culture). Thus, the inexorable operation of longer term processes at a given level can change the functional conditions for the constituent lower level processes, such that the two levels influence each other in an up-down-up-down or sinusoidal fashion. As a concrete example, a particular personality may reveal a secret during a conversation with several friends, which abridges trust and changes the dynamics of the higher order relationship between these friends, which over time might reach back down to alter the personality or self-concept of the person who revealed the secret.

To summarize, the Figure 1 framework, with its up, down, horizontal, and diagonal arrows, formalizes the facts that (a) higher levels of organization emerge from and are supported by lower levels of organization (up arrows: you can't have cognitive processes without constituent brain processes, you can't have human personality without constituent cognitive processes, and you can't have culture without constituent personalities), but that (b) higher levels can have top-down effects upon lower levels of organization (down arrows: cultural conditions can affect the personality traits of cultural members, personality traits can affect cognitive processes, and cognitive processes can affect brain processes); that (c) factors at every level of organization can have irreducible effects upon behavior and experience (horizontal arrows), but that (d) the causal importance of particular levels (i.e., biological vs. personality) doubtless varies according to the type of behavior being explained; that (e) factors at particular levels of organization can moderate the influence of factors at other levels of organization (diagonal arrows connecting horizontal arrows); and that ultimately (f) very large data sets and advanced multilevel modeling techniques will be required to begin to comprehend the complex main and interactive effects among the many possible predictive factors, located within and between the various levels of organization (considered further in the final section of the article). Again, the Figure 1 model may simply restate what most behavioral scientists already assume, and it is consistent with the Comteian hierarchy of sciences (Martineau, 1853/1893; Simonton, in press), the biopsychosocial model (Cacioppo, Berntson, & Crites, 1996; Engel, 1977), Mayer's (1995) hierarchical "systems-topics" framework, and much else. We hope that the presented version of this model makes these assumptions explicit in a way that can forward interdisciplinary discourse and study design.

Focusing on the Top: A Six-Level Framework for Considering Personality in Context

Although each of the aforementioned levels of organization doubtless influences SWB (Kahneman et al., 1999), Sheldon (2004) focused primarily upon personality, social context, and culture in his person-centered analysis of "optimal human being." The present article, written for a target audience of social-personality psychologists, similarly focuses only on the upper part of the Figure 1 hierarchy, ignoring (for now) lower level molecular, hormonal, neuronal, and brain factors and influences, although these are undeniably important also. Although the analysis is based on the Sheldon (2004) book, in this article we consider a variety of issues not considered in the book as well as describe new data relevant to the issues.

The Multilevel Personality in Context (MPIC) model (see Figure 2) specifies four different aspects or levels of personality, which might be inserted into Figure 1 as an elaboration of the personality level of analysis. The MPIC model also incorporates the two highest levels of organization listed in Figure 1, namely, social relations and cultural context. The four-level within-personality framework is based on McAdams's (1996, 1998, 2009) influential "three tiers" conception of personality. According to McAdams, we need at least three different kinds of information to describe a person: information concerning their basic behavioral traits and dispositions (i.e., the psychology of the person-as-stranger, observed from the outside), information concerning their goals and motives (i.e., the psychology of the person-as-intentional agent), and information concerning their sense of self (i.e., the psychology of the person as the self-aware author of, and main character within, their own life-narrative). Trait/dispositional constructs may be located at the bottom tier of personality, closest to temperament and psychobiology. Goal/motive constructs may be located at the middle tier of personality, describing what people are trying to do. Finally, self/self-narrative constructs may be located at the top tier, closest to subjectivity and psychobiography. McAdams argued that each of these three levels of personality provides a unique source of information and that the tiers cannot be reduced to one another. Thus, for example, the five-factor trait model can never win as a complete theory of personality, and neither can theories of motivation, nor theories of self.

Do goals and motives actually "emerge" from traits, and self and identity emerge from goals and motives, in accordance with the concept of emergence depicted earlier while discussing the Figure 1 causal hierarchy?

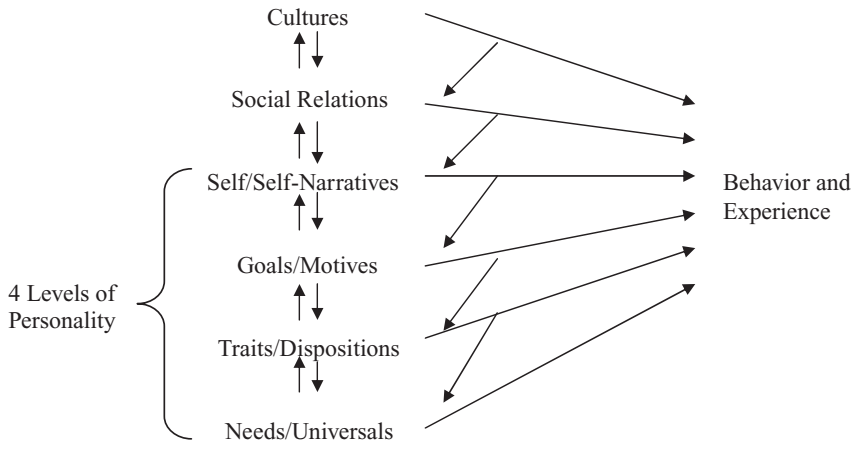

Figure 2. The Multiple Levels of Personality in Context (MPIC) model.

This is a difficult question, as it is clear that motives are the products of much more than just traits (i.e., they are also affected by social learning, interpersonal influence, and contextual affordances), and the same for identities being more than the products of goals and motivated behaviors. However, McAdams and Olson (in press) made a good case for emergence in a longer term developmental sense, arguing that basic personality traits and dispositions, largely based on genetic and heritable factors, provide the initial personality context from which goals and motives develop in middle childhood, which in turn provide grist for the emergence of identity and narrative structures in adolescence and early adulthood. Whether and how much the three levels of individual difference specified by the MPIC model conform to an emergentist concept, we still argue that these levels constitute important separate factors of personality that require separate and simultaneous consideration for complete understanding.

Adding a Foundation to the Model

Thus, Sheldon (2004, 2007, 2008) adopted McAdams's three-tier framework as a promising vehicle for understanding the organization of personality and personality theory. However he also expanded upon the framework in several ways. First, he argued that a fourth level needed to be appended at the very bottom of the three-tier framework, to provide the foundation or substrate from which individual differences emerge. Specifically, it was proposed that all humans may share certain evolved (species-typical) psychological characteristics, beneath the great variety of individual differences that people display. In particular, Sheldon discussed species-typical physical needs (i.e., for food and sleep), social-cognitive abilities (i.e., theory of mind mechanism, cheater detection), socio-cultural behaviors (i.e., music, religion), and psychological needs (examples following). These four categories of universal appear to be standard equipment within human beings, although of course the ways and means by which they are expressed can vary considerably across individuals and cultures.

However in considering "optimal human being" Sheldon (2004) focused primarily upon the basic psychological needs, because they are arguably the most directly relevant type of construct for understanding SWB and optimal functioning. Thus, this topic is worthy of further consideration here. Of course, psychological need concepts have a long and checkered history in psychology, being defined and conceptualized in many different ways. For example, psychological needs have been conceptualized as inherited at birth, versus as acquired through development; as varying across individuals (through development or heredity), versus as being invariant and universal across individuals; as being hierarchically organized (e.g., Maslow's hierarchy), versus as having no particular hierarchical or structural relations; as being conscious and open to self-report, versus as being nonconscious and concealed from the person; and as required experiential inputs that reward behavior, versus as urges or impulses that motivate behavior.

Recently, however, considerable research has demonstrated the potential utility of the self-determination theory (SDT) conception of psychological needs (Deci & Ryan, 1985, 1991; see Deci & Ryan, 2000, for a thorough exposition of SDT's position on needs). In SDT, psychological needs are viewed as experiential nutriments that are vital for human well-being and thriving (Ryan, 1995), in the same way that sun, soil, and water are vital for the thriving of most plants. Thus, psychological needs are defined as requirements, not motives; as universal, not varying across individuals and cultures (although of course, levels of satisfaction and modes of expression certainly vary across individuals and cultures); and as inherited,

not acquired. Again, evolved human nature may supply basic constraints upon individuality, such that all humans, despite their differences, need to satisfy species-typical psychological needs in order to thrive.

Considerable research now supports the SDT approach to needs, suggesting that feelings of autonomy, competence, and relatedness, in particular, are crucial for psychological well-being and thriving. That is, all humans may need to feel they are doing what they would choose to be doing, doing it well, and connecting with others in the process (Deci & Ryan, 2000; Ryan & Deci, 2008). The importance of autonomy, competence, and relatedness has been supported in multiple domains including medicine, business, sports, and education; within cross-sectional, experimental, and longitudinal study designs; and by assessing satisfaction with a wide variety of life-aspects, including school classes, interpersonal relationships, daily experiences, satisfying activities, and rewarding work activities (Sheldon, 2004). It has also been validated in multiple cultures, including Japan, South Korea, India, Nigeria, China, and Bulgaria. Thus, Deci and Ryan (2000) have argued these three experiences are indeed needed by all humans (see Ryan & Deci, 2008, for a recent summary).

Figure 3 again presents the four levels of personality according to the MPIC model, along with arrows illustrating some important assumptions of the model concerning the prediction of thriving/SWB. Again, the top three levels are assumed to vary across persons, whereas the bottom level is assumed to be universal across persons. The solid arrows indicate that whatever a person's differences or uniqueness from others, basic human nature requires that his or her mode of functioning satisfy basic psychological needs, if that person is to live in an optimal way. The dotted arrows indicate that the three higher levels of personality may or may not need to be consistent and aligned with each other for optimality; it depends on the content of the levels involved. For example, if a man is high in trait neuroticism, which produces low SWB, then he might be better off having the neuroticism-inconsistent goals of trying to keep an even keel or trying to avoid overreacting to things. As another example, if a woman is high on agreeableness such that she is susceptible to incorporating self-inappropriate goals and motives from the environment (i.e., her father insists she go to medical school despite the fact that she does not like science and hates the sight of blood), then she may be better off if her evolving self-narrative correctly expresses her true interests, be they in dance or finance, rather than agreeing with the social-contextual level influence (her father; see Sheldon, 2007, 2008, for more discussion of these issues). Thus, she may be assisted in ultimately finding a way of life that better satisfies her needs.

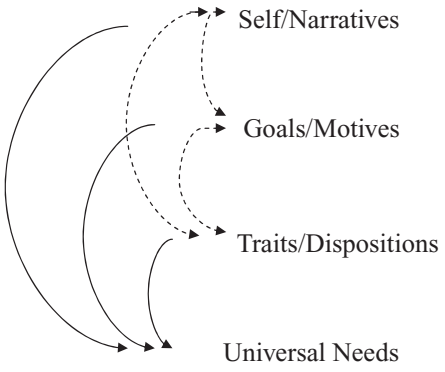

Figure 3. Optimal arrangements among the four levels of personality. *Note.* Solid arrows indicate required connections for thriving, and dashed arrows indicate varying connections for thriving.

There is also considerable other recent evidence supporting the mediational significance of psychological need-satisfaction, coming from studies that address the need-satisfying properties of constructs at all five levels of Figure 2. At the trait level of analysis, Wei, Shaffer, Young, and Zakalik (2005) showed that need-satisfaction mediated between dispositional attachment styles and well-being outcomes, and Sheldon and Gunz (in press) showed that need-satisfaction partially mediated the neuroticism to SWB relationship. At the goal level of analysis, Sheldon and Elliott (1999) showed that the positive effects of longitudinal goal attainment upon changes in SWB were mediated by the need-satisfying daily experiences that goal attainment produced during the striving period, and Niemiec, Ryan, and Deci (2009) showed that the effects of postgraduation goal choices upon changes in SWB were mediated by need-satisfaction. At the self level of analysis, Sheldon and Gunz (in press) showed that psychological need-satisfaction mediated the associations of two self-based constructs upon SWB: feeling self-determined when playing one's "social character" and having a small discrepancy between the social character and one's "unguarded" self. Also, Thorgersen-Ntoumani and Ntoumanis (2007) showed that need-satisfaction mediated between negative self-perceptions of aerobic instructors and symptoms of eating disorders. At a dyadic relations level of analysis, Patrick, Knee, Canavello, and Lonsbary (2007) showed that the positive effects of secure attachment relationships upon SWB were mediated by psychological need-satisfaction, and Smith (2007) showed that reports of positive sexual relations within couples are mediated by psychological need-satisfaction. At a social groups level of analysis, Sheldon and Krieger (2007) showed that the differential 3-year effects upon SWB of attending one versus another law school were mediated by the differential amounts of need-satisfaction afforded by the two schools. In addition, Filak and Sheldon (2003) showed, in a study of 14 different

classrooms, that reduced autonomy and relatedness (but not competence) need-satisfaction in students mediated the negative association between the number of times the teacher had taught the course and positive teacher-course evaluations. There has been very little research examining need-satisfaction as a mediator of various cultural differences, a gap that will be addressed by the new data to be reported in a later section of this article.

Adding Social Relations and Culture to the Model

In addition to specifying psychological needs as important foundational or species-typical elements of personality, Sheldon (2004) also argued that the entire personality system needed to be considered as nested within at least two higher levels of organization still (see Figure 2). Specifically, the "social relations" level of analysis was discussed in terms of the interpersonal relationships and groups within which single personalities are embedded (i.e., interactions and relationships with family, friends, coworkers, new acquaintances, and small groups of these), and in turn, the "cultural" level of analysis was discussed in terms of the overarching cultural traditions, norms, and beliefs within which these interpersonal relationships and interactions are embedded. Using social dilemma theory, hierarchical selection theory, and meme selection theory, Sheldon asserted that, although both of these higher levels of organization rest and rely upon constituent personalities, they can also have top-down effects upon the personalities contained within them.

As one example of such top-down effects, Sheldon and McGregor (2000) showed that participants with "extrinsic" value orientations (money, status, image) scored worse in an iterated social dilemma if they were nested within groups containing other extrinsic participants, whereas they scored better if they were nested within groups containing others with intrinsic value orientations (growth, intimacy, community). In other words, there was a cross-level interaction between personality type and group type to determine individual outcomes; acquisitive individuals succeeded when there were nonacquisitive individuals to exploit but failed when they were grouped with other acquisitive individuals (see also Campbell, Bush, Brunell, & Shelton, 2005; Sheldon, Sheldon, & Osbaldiston, 2000). Sheldon (2004) argued that similar dynamics doubtless apply when one considers personalities and groups of personalities as nested within higher order cultural units (see Earley & Mosakowski, 2002, for a similar multilevel analysis and for examples of cross-level interactions between cultural types and group types).

Comparing the Model to McAdams's Revised Formulation

In sum, the MPIC model (Sheldon, 2004) adds a foundational tier and two upper tiers to McAdams's (1996) original three tiers, resulting in six levels or tiers. Notably, McAdams and Pals (2006) introduced somewhat similar additions, referring to foundational (evolved) human nature, social ecology processes, and culture-level processes along with the three earlier tiers of personality (dispositional traits, goals/characteristic adaptations, and selves/life-narratives). Thus, they also identified six primary areas of focus. In addition, McAdams and Pal's "fifth principle" of "a new big five for personality theory" argued that culture likely has the strongest effects upon self processes, which are substantially determined by culturally provided narrative structures. Culture was said to have less strong effects upon motivation/goal processes and the weakest effects upon dispositional traits, which are substantially determined by biology. This is consistent with the hierarchical arrangement of the MPIC model, according to which each level has the most direct effects upon the level immediately below and more indirect effects upon levels several rungs away on the ladder.

However, several differences between the current approach and the McAdams and Pals (2006) approach are worthy of mention. One difference is that McAdams and Pals (2006) moved away from McAdams's original three tiers (or levels of organization) perspective and, more generally, did not conceptualize their 2006 framework as a nested multilevel hierarchy. Thus, although certain boxes are located above or below each other in their Figure 1 (p. 213), the vertical ordering appears to have little intrinsic meaning. Also, the vertical ordering of McAdams and Pals's (2006) revised framework, in which the goal/motives tier is located below the trait/dispositions tier, is at odds with McAdams's (1996) original ordering, in which the goal/motive tier is located above the trait/dispositions tier.

Another difference between the two approaches concerns the location of the social relations level of organization. McAdams and Pals placed a "social ecology" box at the very bottom of their schematic figure, beneath personality. The social ecology box contains social situations, role demands, and developmental tasks and challenges. In contrast the MPIC model locates the social relations level *above* personality, viewing social relations as an emergent product of the interaction of two or more personalities in real-time. By nesting personality under the social relations level, which is in turn nested under the culture level, the MPIC model provides a framework that is consistent with multilevel modeling perspectives, which focus on individuals nested within groups nested within larger scale groups. Another difference between

the two models is that the MPIC model is meant to accommodate an analysis of the causal structure underlying a broad range of behavior and experiential outcomes, such that appropriate measurements of relevant constructs at various levels of analysis could be inserted into the model in the attempt to predict such outcomes (as is illustrated next). In contrast, McAdams and Pals's (2006) framework seems more of a schematic diagram designed to represent the conceptual relations between different areas of theory rather than a way of representing the causal processes underlying a particular behavior. Also, although the McAdams and Pals framework contains a system of arrows linking some boxes to others, it is not always clear why some boxes are linked and others are not. For example, basic human nature in their diagram has arrows pointing to culture and to traits but not to goals (characteristic adaptations) or selves (life-narratives). Why is species-typical human nature said to generate cultural differences, as such differences likely emerge from varying historical facts and isolation between large groups of people and not from factors common to all humans? Why is basic human nature not linked to goals (characteristic adaptations), as goals are presumably affected by evolution and its adaptive constraints?

Another potential difference between the current conception and the McAdams and Pals (2006) approach concerns the potential for cross-level interactions between different levels of the person. As Figure 2 illustrates, the MPIC model is designed to accommodate moderator relationships between levels (as in the Group-Composition × Personality Style interaction found in the social dilemma research just described; Sheldon & McGregor, 2000). McAdams (1996) initially disavowed the idea that the three tiers should have cross-level connections or influences upon one another, stating that "the levels do not need to exist in meaningful relation to each other to exist as meaningful levels" (McAdams, 1996). However, in more recent work McAdams and colleagues have fruitfully examined the thematic consistency and empirical linkages between traits and goals (McGregor, McAdams, & Little, 2006), between traits and self-narratives (McAdams et al., 2004; McGregor et al., 2006), and between constructs at all three tiers of personality (Bauer, McAdams, & Sakaeda, 2005). Indeed, it seems only logical to suppose that people are more integrated and happier to the extent that their personality traits serve (or are at least consistent with) their goals and motives, that their personality traits serve (or are at least consistent with) their sense of self and identity, and that their goals and motives serve (or are at least consistent with) self and identity. We suggest that exploring the functional and structural links within and between the different tiers of personality offers exciting new research potential, providing a way of moving researchers away from a narrow focus on one aspect of personality and toward a more integrated and interdisciplinary approach, especially as context and culture are added into the mix (Sheldon, 2011).

In short, the proposed six-level framework for considering personality-in-context builds upon McAdams's three-tier model but also expands upon it by developing the nested hierarchical conception implicit in the original formulation. To use a "house" metaphor (Little, 1996), we suggest that psychological needs form the basement or foundation of the house; that traits, goals, and selves form the three floors of the house; that social relations form the neighborhood and town for the house; and that cultural membership forms the region and nation of the house. We further suggest that this consilient framework can be used as a heuristic for locating a wide variety of constructs, questions, and research designs and for identifying new hypotheses that might be tested by personality psychologists. The framework is agnostic regarding which particular theories and approaches, at which level of analysis, are correct or preferable; instead, the framework might be overlaid on top of our existing theories and research activities without replacing any of them. Again, by making reference to a single accepted meta-framework, we might more quickly weave the seamless web of knowledge that Wilson (1998) argued should be our true goal.

Carver and Scheier's Model

Carver and Scheier's (1981, 1998) control theory of personality provides another broad-scale hierarchical framework for understanding personality, which is worth comparing to the MPIC model. This theory defines personality as an action system consisting of a series of nested and interlocking negative feedback loops. Higher level goals (i.e., global future images or broad personal principles) supply standards for the top-down regulation of lower level action sequences (such as applying a particular skill or behavioral sequence), turning the lower level procedures on and off as necessary during everyday functioning. People of course vary in the goal contents that are found at each level of the action system (i.e., some people are trying to become doctors, others dentists; or, at a lower level of control, some people have the skill of driving a car, others don't). In addition, people vary in the structure of the action system, for example, in the "horizontal coherence" (or conflict vs. instrumentality) among goals at the same level of the action system (Emmons & King, 1988), or in the "vertical coherence" among goals at different levels of the action system (Sheldon & Kasser, 1995). Sheldon and Kasser (1995) showed that both the content and structure of peoples' goal systems were associated with SWB.

However, there are some important differences between Carver and Scheier's model and the MPIC

model. First, control theory refers only to goals, skills/programs, and lower level action modules, with no provision for considering other important features of personality. In McAdams's (1996) terms, the Carver and Scheier model addresses the goals or characteristic adaptations tier of personality without addressing the trait and dispositions tier and only tangentially addressing the self and self-narrative tier of personality. Thus, although the Carver and Scheier hierarchical model might perhaps be inserted as a comprehensive account of personality functioning at the motive and goals level of the MPIC model, it does not address other aspects of personality such as needs, traits, and self-narratives. Also, the Carver and Scheier model does not explicitly incorporate the contexts in which personality is embedded. Where do the goals and principles that haunt the action system come from, and how do social or cultural processes impact goal selection and goal functioning more generally? Although the Carver and Scheier model could potentially include social relations and culture as higher level influences upon the action system, it would probably be incorrect to say that these levels provide high-level goals or standards directly locatable within the personal action system. One would need to consider the social influence and internalization processes by which environmentally recommended goals are translated, more or less completely and consciously, into a person's actual goal system (Kuhl & Kazen, 1994).

In sum, we suggest that the MPIC model may provide a useful way of conceptualizing the entire person including his or her social and cultural environment, by delineating the full range of possible influences upon the person and his or her behavior and experience, as well as top-down, bottom-up, and cross-level causal processes that may occur between these levels. The model is content free and theory neutral regarding what specific factors and processes, at each level of organization, are correct or should be considered in a particular case. Instead, it tries to delineate what is actually happening as people behave and experience moment to moment, providing an overarching heuristic for theory creation and model building.

Still, the MPIC model does have several structural implications that provide testable hypotheses. In the next section of the article we describe these implications as postulates, derive several hypotheses from them, and present data that supports these hypotheses.

H1: In predicting any complex and multiply determined behavioral or experiential phenomenon, one should find main effects of appropriate measured variables at every relevant level of organization. This is because of the assumption that each level has emergent properties that are not reducible to the properties of the levels below, and therefore, each level has irreducible effects upon at least some phenomena. In specifically predicting SWB or thriving, one should find that all three of the individual difference levels identified by the MPIC model (traits, goals, and selves), as well as the two higher levels (social relations and culture), have independent influence. This would be consistent with past research concerning the many predictors of SWB located at many levels of analysis ranging from biological to social to cultural (Diener, Kahneman, & Schwarz, 1999), and would specifically support McAdams's (1996) claim that the three tiers of personality each have causal weight, as well as McAdams and Pal's (2006) claims that cultural processes needed to be added to the model, with their own causal weight.

H2: In predicting SWB or thriving, all three needs (at the bottom tier of personality) should have independent main effects upon SWB, in every culture examined. This would replicate past findings (Deci & Ryan, 2000; Filak & Sheldon, 2003) and would support SDT's notion that each need represents a specific category of psychological nutrient that is universally essential to thriving (Ryan, 1995).

H3: The higher-level personality effects should be mediated by psychological need-satisfaction, because the psychological needs are presumed to provide the evolved constraints that all humans must satisfy in order to thrive, regardless of their individual and cultural differences. In other words, the reason that certain societies, self-narratives, goals, or traits have positive effects upon SWB is that they help people to satisfy their psychological needs (see Figure 3), and conversely, a negative effect of any of these variables upon SWB should be explainable by the negative impact of that variable upon need satisfaction.

H4: In predicting peoples' personality characteristics one should find significant top-down effects of culture, especially upon the self/identity level of personality, and less so upon the goal/motives level and especially less upon the trait/dispositions level of personality. This implication is derived from McAdams and Pal's (2006) fifth principle for an integrative personality psychology, that culture has effects especially upon selves/self-narratives and less so upon goals and traits. Such a finding would also support the hierarchical arrangement of the MPIC with self processes at the top of the personality hierarchy, most directly influencible by trans-personality levels of organization.

H5: In addition to finding cultural main effects upon outcomes, one may also find that culture moderates the effects of lower levels upon outcomes. In the case of SWB, culture may moderate the effect of self, goal, trait, or need variables upon SWB. For example, Oishi and Diener (2001) showed that the effects of goal motivations upon SWB varied

across two different cultural groups; striving "because it is fun" was less predictive of SWB in an Asian sample. As another example concerning culture, Sheldon, Elliot, Kim, and Kasser (2001) found that relatedness need-satisfaction had a larger effect on SWB within a South Korean sample, compared to an American sample.

Testing the MPIC Model

One recent study (Sheldon & Tan, 2007) tested the aforementioned first, second, and third hypotheses by assessing SWB and also many known predictors of SWB located at each of the six levels of analysis within Figure 2. Specifically, felt autonomy, competence, and relatedness need satisfaction were assessed to represent the foundational level of personality; the big five traits were assessed to represent the trait/disposition level of personality; recent goal attainment and goal self-concordance were assessed at the goal/motive level of personality; self-esteem and positive possible selves were assessed at the self/self-identity level of personality; reports of social support and autonomy support from friends, family, and mentors were assessed at the social relations level of analysis; and samples were obtained within both the United States and Singapore to represent the cultural level of analysis (one individualistic, the other more collectivistic; Triandis, 1995).

The data analysis proceeded in two stages: (a) identify the single best predictor of SWB from among the candidates at each conceptual level of analysis, and then (b) pit the thus-identified best predictors against each other, to test the irreducibility of each type of information. Thus, although social context, self, goal, and trait variables all predicted SWB (supporting current Hypothesis 1), and autonomy, competence, and relatedness need-satisfaction all predicted SWB (supporting current Hypothesis 2), in the Sheldon and Tan (2007) study we identified the single best predictor at each level and moved forward. The final analysis revealed that SWB could best be predicted by considering the simultaneous significant effects of competence need-satisfaction, (low) neuroticism, goal attainment, self-esteem, social support, and cultural membership (U.S. participants having higher SWB than Singaporean participants). None of these factors' effects could be accounted for by any of the other factors, and all were necessary for the most complete picture. In addition, Hypothesis 3 was supported by these data, as need-satisfaction at least partially mediated each of the higher levels' effects on SWB. Hypotheses 4 and 5 were not examined with the Sheldon and Tan (2007) data, because the presence of only two cultural groups within the sample severely limited cultural moderation effects.

To supply a new and even more ambitious test of the MPIC model, using many of the same variables used by Sheldon and Tan (2007), we obtained data from college students nested within 21 different cultural groups (data originally reported in Cheng et al., in press), with a total sample size of 3,665 participants possessing complete data on the variables of interest; each culture supplied a minimum of 128 participants. The nations represented included the United States, Russia, Greece, Italy, the United Kingdom, Poland, Mexico, Chile, Indonesia, New Zealand, Korea, China, Cyprus, Lithuania, Latvia, Czech Republic, Slovakia, Hong Kong, Macau, Taiwan, and Portugal. Participants completed the questionnaire in their native language. To assess well-being, participants were administered the PANAS (Watson, Tellegen, & Clark, 1988) and the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985); because they formed a single factor, these were combined into a single SWB index (after reverse-scoring negative affect; Diener, 1994; Diener & Lucas, 1999; Sheldon & Elliot, 1999).

To assess the "self" level of personality we used the Singelis Self construal scale (Singelis, 1994), specifically focusing on the independent self scale; to assess the goals/motives level of personality we used the Schwartz Value Survey (Schwartz, 1992), specifically focusing on the self-direction value; to assess the trait level of personality we used the Neuroticism scale from the NEO-FFI (Costa & McCrae, 1985). To measure autonomy, competence, and relatedness need-satisfaction we used the nine items (three per need) employed by Sheldon et al. (2001) in their study of "most satisfying events." The social relations level of analysis was not addressed within this data. However, each of the 21 cultures was assigned an individualism score derived from Oyserman, Coon, and Kemmelmeier's (2002) meta-analysis, allowing for a multilevel assessment of this cultural feature upon the results. In three cases an individualism score had to be imputed to a cultural group because that group was not included in Oyserman et al.'s (2002) meta-analysis; in all three cases, the score for a geographically adjacent country was used instead. See Cheng et al. (in press) for further information concerning the study and methodology.

To examine the five hypotheses central to the MPIC, hierarchical linear modeling (HLM 6.0; Raudenbush, Bryk, Cheong, & Congdon, 2004) was used to statistically analyze a data structure where participants (Level 1) were nested within cultural individualism scores specific to their country of origin (Level 2). Model testing for the analyses proceeded in five phases: intercept-only model, means-as-outcome model, random-regression coefficients model, intercepts-as-outcome model, and intercepts and slopes-as-outcomes model. The intercept-only model is a null model that provided information about how much variability in SWB existed within

and between cultures. The means-as-outcomes model provided information about whether SWB was higher or lower in countries with more individualism. The random regression coefficients model predicted SWB by the other psychological variables. The intercepts-as-outcomes model predicted SWB by culture and the psychological variables. The intercepts and slopes as outcomes model provided information about whether the relationship between the psychological variables and SWB depended upon cultural individualism.

To begin, an intercept-only model was run to serve as a benchmark and determine the amount of variance in SWB existing at the culture level. The intercept-only model revealed an intraclass correlation coefficient of .15. Thus, 15% of the variance in SWB was between-cultures and 85% of the variance in SWB was within cultures, that is, at the person level of analysis (see Figure 1).

Level-1 Model
$Y = B0 + R$
Level-2 Model
$B0 = G00 + U0$

Then, a means-as-outcomes model added cultural individualism as a Level 2 predictor variable. The regression coefficient relating cultural individualism to SWB was positive and statistically significant ($b = 7.54$, $p = .007$); members of more individualistic cultures had higher SWB.

Level-1 Model
$Y = B0 + R$
Level-2 Model
$B0 = G00 + G01^{*}(IND) + U0$

These models established that there was a substantial portion of variance in SWB between cultures and that average SWB was significantly higher in countries with more individualism.

MPIC Hypothesis 1

Next we examined the "irreducibility" postulate of Hypothesis 1, which specifies that all three levels of personality identified by the MPIC account for significant variance in outcomes and none are reducible to the others. To examine this question, a random-regression coefficients model and a nested intercepts-as-outcome model were tested using the personality variables (independent self, self-direction, and neuroticism) simultaneously as predictors. The intercept-only model and the means-as-outcomes model remained the same.

The random regression coefficients model relating the personality variables to SWB indicated that the regression coefficient relating independent self to participants' SWB was statistically significant ($b = .23$, $p < .001$), as was self-direction ($b = .10$, $p = .008$) and neuroticism ($b = –1.04$, $p < .001$). Thus, each of these levels of personality was associated with SWB, and none were statistically reducible to the others.

Level-1 Model
$Y = B0 + B1^{*}(IDS) + B2^{*}(SD) + B3^{*}(N) + R$
Level-2 Model
$B0 = G00 + U0$
$B1 = G10$
$B2 = G20$
$B3 = G30$

The intercepts-as-outcome model was then tested with cultural individualism entered at Level 2.[1] Do cultural and personality differences all account for independent variance, as the MPIC proposes? The regression coefficient relating cultural individualism to participants' subjective well being was significant ($b = 3.33$, $p = .02$), as were the coefficients for independent self ($b = .22$, $p < .001$), self-direction ($b = .10$, $p = .009$) and neuroticism ($b = –1.04$, $p < .001$). Thus, all three of the personality variables were significant predictors of SWB regardless of culture, and the culture effect also remained significant. All four types of measure carry unique information.

Level-1 Model
$Y = B0 + B1^{*}(IDS) + B2^{*}(SD) + B3^{*}(N) + R$
Level-2 Model
$B0 = G00 + G01^{*}(IND) + U0$
$B1 = G10$
$B2 = G20$
$B3 = G30$

MPIC Hypothesis 2

Of specific interest to the second hypothesis was SDT's claim that all three needs are important to human thriving (Deci & Ryan, 2000; Sheldon, 2004). To examine this question, a random-regression coefficients model was tested using the need satisfaction variables (competence, autonomy, and relatedness) simultaneously as predictors to establish the relationship between the needs satisfaction and SWB. The regression coefficient relating autonomy to SWB was statistically significant ($b = 1.13$, $p < .001$), as was the coefficient for competence ($b = 1.20$, $p < .001$) and

[1]Examination of the SWB distribution indicated that SWB distributions varied somewhat across cultures and in some cases was negatively skewed. Accordingly, the final estimation of fixed effects with robust standard errors is reported here.

relatedness ($b = .54$, $p < .001$). This provides new and more comprehensive support for SDT's claims that the three needs are each important no matter what culture a person lives in.

Level-1 Model
Y = B0 + B1*(NAUTO) + B2*(NCOMPETE) + B3*(NRELATE) + R
Level-2 Model
B0 = G00 + U0
B1 = G10
B2 = G20
B3 = G30

MPIC Hypothesis 3

Of specific interest to the third hypothesis was to determine whether the relationships between the personality variables and SWB, and between cultural individualism and SWB, were mediated by the three need satisfaction variables. Do differences in the degree of satisfaction of the supposedly invariant needs account for the effects of higher level personality or cultural variations? Because the relationship between culture and SWB, between the personality variables and SWB, and between the need satisfaction variables and SWB had already been established earlier in this article, to examine mediation an intercepts-as-outcome model was tested with all variables entered simultaneously.

In this analysis the regression coefficient relating participants' autonomy to participants' SWB remained statistically significant ($b = .55$, $p < .001$), as did competence ($b = .60$, $p < .001$) and relatedness ($b = .52$, $p < .001$). The regression coefficient relating cultural individualism to participants' SWB was not statistically significant ($b = .44$, $p = .72$), suggesting that the cultural individualism effect was completely mediated by cultural differences in levels of need-satisfaction. Also, self-direction values was not a significant predictor of SWB when the three needs variables were included in the model ($b = –.01$, $p = .72$). However, the regression coefficient relating participants' independent self to participants' subjective well being remained significant ($b = .09$, $p = .001$), as did neuroticism ($b = –.92$, $p < .001$), suggesting that need-satisfaction cannot explain all of these variables' effects.

Level-1 Model
Y = B0 + B1*(IDS) + B2*(SD) + B3*(N) + B4*(NAUTO) + B5*(NCOMPETE) + B6*(NRELATE) + R
Level-2 Model
B0 = G00 + G01*(IND) + U0
B1 = G10
B2 = G20
B3 = G30
B4 = G40
B5 = G50
B6 = G60

In sum, including the three need satisfaction variables into the intercept-as-outcome model significantly reduced the coefficient for independent self and neuroticism, and the self direction and cultural individualism coefficients became nonsignificant. The difference in the deviance statistics between the intercepts-as-outcome model with the personality variables (deviance = 27,644.17) and the intercepts-as-outcome model with both the personality variables and the needs satisfaction variables (deviance = 27,276.24) indicated the combined model was a better fit: ΔDeviance = 367.93 (3), $p < .001$. Taken together, these results provide evidence that psychological need-satisfaction, purportedly at the "foundational" level of personality, accounts for the much of the effect of differences at higher levels of personality and context upon SWB.

MPIC Hypothesis 4

Our fourth hypothesis involved testing McAdams and Pal's (2006) speculation that culture has its largest effects upon the "self" level of personality, with smaller effects on the motivation level of personality and the smallest effects on the trait level of personality. Are the top-down effects of culture transmitted primarily through the "highest" level of personality, the one closest to culture according to the MPIC model? To examine this question we computed intraclass correlation coefficients for the three personality variables, predicting that there would be the most variation by culture for the independent self variable, less variation for the self-direction variable, and the least variation for the neuroticism variable. Indeed this was the case, with intraclass correlations (ICCs) of .09, .06, and .03, respectively. We also examined ICCs for the three need-satisfaction variables, finding considerably more culture-level variation in felt autonomy, competence, and relatedness (ICCs = .20, .17, and .21, respectively). This suggests that culture may have larger effects upon the average satisfaction of basic needs than it does on personality variations and individual differences.

MPIC Hypothesis 5

Our fifth hypothesis involved examining whether culture-level variables moderate either personality

effects on SWB or psychological need effects on SWB. Do personality and need-satisfaction variables have different effects in different cultures? First, we examined if cultural individualism acted as a moderator between the need satisfaction variables (autonomy, competence, and relatedness) and SWB. To examine this question, the intercepts and slopes-as-outcome model was tested with all predictors in the model simultaneously to test cross-level interactions. The cross-level interaction between cultural individualism and autonomy was statistically significant (b = -.60, p = .045), as was competence (b = 1.27, p < .001); however, relatedness (b = –.42, p = .11) was not. Thus, cultural individualism acted as a moderator for the relationship between autonomy and SWB and competence and SWB; the competence effect on SWB was larger in individualistic cultures, and the autonomy effect on SWB was smaller in individualistic cultures. We consider these findings further next.

Level-1 Model
Y = B0 + B1*(NAUTO) + B2*(NCOMPETE) + B3*(NRELATE) + R

Level-2 Model
B0 = G00 + G01*(IND) + U0
B1 = G10 + G11*(IND)
B2 = G20 + G21*(IND)
B3 = G30 + G31*(IND)

Next we examined if cultural individualism acted as a moderator of the personality variable effects (independent self, self-direction, and neuroticism) upon SWB. To examine this hypothesis, the intercepts and slopes-as-outcome model was tested with all predictors in the model simultaneously to test for cross-level interactions. The cross-level interaction between cultural individualism and participants' independent self was positive and statistically significant (b = –.17, p = .03); self-direction (b = –.15, p = .32), and neuroticism (b = .16, p = .07) were not significant. Thus, cultural individualism acted as a moderator for the relationship between independent self and SWB; the independent self effect was smaller in individualistic cultures, just as the autonomy need-satisfaction effect was smaller in individualistic cultures (and larger in more collectivist cultures). These findings perhaps fit a "deprivation" model of needs (Sheldon & Gunz, 2009), in which cultural settings not conducive to need satisfaction may amplify the effects of needs satisfaction, just as changes in available Vitamin C (decreasing or increasing) have larger effects in contexts in which Vitamin C is chronically scarce.

Level-1 Model
Y = B0 + B1*(IDS) + B2*(SD) + B3*(N) + R

Level-2 Model
B0 = G00 + G01*(IND) + U0
B1 = G10 + G11*(IND)
B2 = G20 + G21*(IND)
B3 = G30 + G31*(IND)

In sum, analysis of the cross-cultural data supported five central tenets of the MPIC. Hierarchical linear modeling demonstrated cultural individualism scores had a unique and significant effect on SWB when examined in isolation and that these effects remained significant when the significant effects of personality trait, goal, and self variables were included. In addition, the results demonstrated that all three needs satisfaction variables were positive and significant predictors of SWB, regardless of cultural affiliation. Furthermore, the need-satisfaction variables completely accounted for the effects of cultural individualism and self-direction values and partially accounted for the effects of neuroticism and independent self. These results are not without limitations, though. Statisticians suggest there may perhaps need to be hundreds of units at the higher level (e.g., countries) to adequately model nested variance. Moreover, the participants in the sample were predominately college students and participants from 17 to 22 years old accounted for 90% of the data. The composition of the sample may have created a homogenizing effect, possibly watering down within-culture differences for which there may have already been a less-than-ideal number of groups. Although, given the broad cultural scope of the data, and the difficulty of gathering such data sets, there is considerable merit in the current findings.

A General Heuristic for Designing MPIC Studies

Next we present a brief set of considerations that researchers might keep in mind as they design large-scale studies or try to consider phenomena from multiple levels of analysis.

Step 1: Identify the behavioral or experiential phenomenon to be understood and predicted. In this article we have focused on the experience of SWB, but one could examine many other phenomena, such as the experiences of anger, jealousy, or anxiety, or the behaviors of helping, arguing, or achieving.

Step 2: At each level of analysis within Figure 1 or Figure 2, identify the variables or factors most likely to have influence upon that phenomenon. Of course, many theorists will tend to approach the phenomenon primarily from one level of analysis,

namely, the one upon which their discipline or theory focuses. However, the hierarchical pluralism concept suggests that it is always worth zooming out, to consider effects at other levels of analysis. Such consideration allows us to examine the main effects of both the lower-level constituents of the primary phenomenon, and the higher-level contexts in which that phenomenon is embedded.

Step 3: Identify the cross-level interactions among the identified factors that might also influence the behavior. Is a lower level factor expected to have the same effects regardless of the higher level context, or are there some higher level influences or conditions that might alter the effects of the causative factor that one has focused on? For example, as shown by Oishi and Diener (2001), cultural type may moderate the effect of goals upon SWB.

Step 4: Design a study that allows all of these factors to be manipulated or measured as variables, so that the posited model can receive a full test. This may include collecting data in multiple settings, groups, and cultures, depending on which levels of analysis have been identified as likely to be important. Ideally, the study will examine behavior over time while tracking all of the predictive variables over time. This will allow for identification of top-down, bottom-up, lagged, and other sequences of causation.

Step 5: Analyze the data using multilevel and causal path modeling procedures. Ideally, one will have enough data to construct and test a single model spanning multiple levels of analysis. In the doubtless-frequent cases where the initial model needs to be revised, the large size of the data set will give greater confidence that the findings are not just due to chance or sampling error.

Researchers trying to apply this approach would need to be fluent in the concepts and methods of several adjacent levels of analysis, and they would also need to be fluent in the possible cross-level interactions that may occur between the levels of analysis close to the phenomenon. Thus for example, an anxiety researcher might want to know about the biological disregulation that accompanies panic attacks, the cognitive processes involved in the construal of situations, the personality processes (traits, temperament) that influence the response to such construals, the interpersonal processes by which anxious personalities interact with others, and the cultural-level processes by which anxiety is evoked and channeled. What this implies is a five-level model for data collection: multiple biological processes accompanying multiple cognitions each nested inside of multiple types of personalities nested inside of multiple types of interaction pattern nested inside of multiple types of cultures. Obviously, such data collections are daunting to even think about, much less actually conduct and analyze. However, we believe that this kind of study may provide the best route to truly comprehensive, integrated knowledge within psychology and across the disciplines related to psychology.

Conclusion

Much terrain has been covered in this article. We hope we have successfully reemphasized the point that multiple levels of analysis need to be simultaneously considered for a complete explanation of almost any human phenomenon, including the phenomenon of SWB. The MPIC model, representing the upper part of a more general causal hierarchy, was described.

In the second part of the article we tried to show that much of what is already known about SWB can be contextualized within the MPIC model, as either level main effects or cross-level interactions. Psychological need-satisfaction was proposed to be the primary criterion for determining whether factors at other levels of personality are salubrious or not. As presumed species-typical requirements for thriving, psychological needs may constrain individual differences, biasing people to have to remain within certain reasonably positive limits. Finally, we have suggested some simple heuristics for designing comprehensive multidisciplinary studies using the MPIC approach. Although such studies are more easily described than they are funded, conducted, and analyzed, we suggest that such studies will be essential for scientific advancement.

Note

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