
COMMENTARIES

Levels of Analysis, Regnant Causes of Behavior and Well-Being: The Role of Psychological Needs

Edward L. Deci and Richard M. Ryan

Department of Clinical and Social Sciences in Psychology, University of Rochester, Rochester, New York

Within both basic philosophy of science and theoretical biology the idea that scientific disciplines can be organized in some type of hierarchy reflecting micro-to-macro levels of analysis has been widely discussed (e.g., Corbi & Prades, 2000; Kauffman, 2000). Yet psychologists have often eschewed philosophical schemes as largely irrelevant to their investigation of human behavior. Sheldon, Cheng, and Hilpert's (this issue) systematic presentation of these general ideas appropriately brings attention to the issue, which impacts all attempts at scientific explanation within our field. As would be expectable, their focus was primarily on what they put as the top three levels—personality, social relations, and culture—which are the primary levels where Sheldon's own research has resided, but clearly many of their considerations apply across the levels Seldon et al. have differentiated, from micro-to-molar systems. It is noteworthy, however, that the levels they selected are somewhat arbitrary both in terms of what constitutes a level and what disciplines or fields of study get included at particular levels. For instance, social psychology gets a level, personality psychology gets a level, and cognitive psychology gets a level, so three of the nine levels are psychology, whereas the whole of chemistry gets just one level with all fields of chemistry contained within it. As well, one could ask why certain disciplines are combined within one level and why some other relevant disciplines are left out all together. Why, for example, is sociology combined with anthropology and called culture? Is sociology really more akin to anthropology as part of the culture level than it is to social psychology as part of the social relations level? We would have been more inclined to include it with social psychology. And why do the disciplines of economics and political science, which are highly relevant to the causes of human behavior and are critical aspects of culture, not appear at all in the hierarchy? In short, it seems clear that one could provide further differentiations, or different categorizations and descriptions

of levels. However, although researchers could consider different levels in their explanations, there are important sensibilities captured in Sheldon et al.'s model that could be useful for other investigators as well.

As Sheldon et al. highlight, levels of explanation interpenetrate, making conciliation essential to our science. For example, at a macrolevel, U.S. culture is defined by the interplay of its democratic political system and its capitalist economic system, and surely these macrosystems influence and affect human behavior and subjective well-being, as some of Sheldon et al.'s data indicated. We know, for example, that when people have the experience of autonomy, which tends to be facilitated by the democratic process, they are more engaged and effective in learning and problem solving and display greater well-being (e.g., Jang, Reeve, Ryan, & Kim, 2009; Patall, Cooper, & Robinson, 2008). And we know that contingent, monetary rewards (e.g., Deci, Koestner, & Ryan, 1999), which are a central component of capitalism (Kasser, Cohn, Kaner, & Ryan, 2007) can diminish people's engagement, effective performance at heuristic activities, and wellness. So we infer that the actual political and economic systems would also have empirically documentable influences, an inference borne out in research comparing nations regarding quality of life (see, e.g., Eckersley, 2004). In contrast, other cultures that have a totalitarian political system combined with a central-planning economy (e.g., most of the Eastern Bloc prior to 1989; see Deci et al., 2001) have vastly different effects on their residents. Macrosystems can even impact biology, which in turn affects psychological needs and wellness, as when poverty contributes to toxin exposures or poor nutrition. Within SDT we discuss such interpenetrating factors in terms of *embedded contexts* analysis (e.g., Connell & Wellborn, 1991; Deci & Ryan, in press) in which our interest is in how the levels of systems within which individuals are embedded impact wellness and full functioning through the distal or proximal

facilitation or thwarting of basic psychological and physical needs (Ryan & Deci, in press).

Levels of Analysis

We believe that each of the levels of analysis specified by the MPIC model, and sometimes multiple interacting levels, are particularly useful for answering certain kinds of questions that lend themselves to that (or those) level(s). No doubt some people pick particular disciplines (or levels of analysis) because those disciplines or levels seem the most relevant for answering questions they feel passionately eager to answer. Conversely, it may also be that people pick particular questions to research because they are working in a particular discipline and those are the kinds of questions their disciplines deal with. In other words, if your tool is a hammer, most questions will appear as variations in the type of a nail.

Reductionism is about reducing everything to the simplest mechanisms—making everything into the right nail. Thus, some researchers will claim that delight or distress, like all experience and behavior, are caused by neural circuits in “the brain,” yet it is equally legitimate to claim that these emotions are caused by the psychological significance of an event—that is, by the meaning that a person gives, for example, to an approving or a disapproving look from a significant other. In other words, multiple explanations can all be correct, though not equally satisfying or relevant for a theorist’s or practitioner’s purposes.

In the context of this journal, *Psychological Inquiry*, it is important to emphasize that for many behavioral phenomena, particularly those entailing complex intentional actions, it is *psychological* events that supply the most relevant point of entry, and that carry the most causal leverage. This idea relates to what, in earlier writings, we have described as the *principle of regnant causes* (e.g., Ryan & Deci, 2004, 2006). Sheldon et al. (this issue) similarly refer to it herein as the issue of “causal weight” (e.g., p. 9), and it is the core of “Step 2” in their analytical heuristics (p. 13).

It follows from this principle that certain kinds of questions tend to align with certain disciplines or levels of analysis. For example, given Sheldon’s research on motivation, individual differences, and well-being, he would focus especially on the level of *personality*. Accordingly, taking a cue from McAdams (1996), Sheldon et al. differentiate that one psychological subdiscipline into four additional sublevels of analysis (viz., self, motivation, traits, and needs). They then discuss how the personality level and its four sublevels interact with the social-relations and culture levels that are just above personality in the hierarchy because those levels seemed relevant as antecedents of sub-

jective well-being, which they selected as the focal outcome. This nicely illustrates how the focus of one’s research makes some points of entry into this hierarchy more or less relevant.

Regnant Causes of Behavior and Well-Being

Within the tradition of self-determination theory (SDT; Ryan & Deci, 2000), most of the attention is at the cognitive, personality, social relations, and culture levels of analysis. Interactions of these psychological variables with the social environment and culture typically represent the regnant causes (see, e.g., Ryan & Deci, 2006) both of the motivated behaviors and interpersonal phenomena we are trying to explain within the theory and of the types of behavioral outcomes we are trying to affect with SDT-based interventions (Deci & Ryan, 2000; Ryan & Deci, 2000). In other words, we believe that people’s psychological experiences, whether conscious or nonconscious, are frequently the most important proximal causes of their behaviors and that social contextual variables strongly influence those experiences and behaviors. As such we often focus on the social contexts because they can provide the most powerful leverage for interventions on people’s motivations, thoughts, and behaviors. Although clearly individual differences in biology, as well as ambient macrocontexts within which individuals are embedded, influence psychological experiences and processes (Deci & Ryan, in press), interventions most often work more effectively at the proximal level rather than at these more distal levels.

For example, whether we are attempting to influence school systems to improve the education of students, health care organizations to make them more effective for patients, workplaces to make them more nourishing for employees, sport organizations to make them more satisfying for athletes, homes to make them more growth promoting for everyone in them, or psychotherapy offices to make them more effective at ameliorating pain and facilitating psychological health, we are operating with the belief that the key individuals’ *psychological experiences* are the regnant causes of their behaviors, so we attempt to create conditions that will alter those experiences—that will enhance the people’s autonomous motivation, mindfulness, perceived competence, and feelings of relatedness to others. The proximal social and interpersonal conditions that promote these enhanced experiences can be directly altered and tested (e.g., Deci & Ryan, 2008; Ryan & Deci, 2008). Of course, macrocultural contexts involving factors from economics, history, and political theory are relevant to the psychological interventions and evaluations, although they are likely even more relevant as regnant causes for promoting change in the macrosystems themselves.

Recognizing too that all human experiences are dependent on neurological processes, and the chemical and physical events that make up the working brain, it is nonetheless comparatively rare that the mechanisms of brain are a useful point of intervention, or provide full explanations of motivated, goal-directed behaviors. Rather, social psychological interventions are frequently the more fruitful routes for affecting individuals' behavior, development, and well-being when compared with manipulations of variables either lower or higher within the levels of analysis in the Sheldon et al. hierarchy. Thus, psychological analyses are often quite practical foci for those who wish to apply scientific work to social and behavioral problems. But they would not be the regnant causes for someone interested in the mechanics of reflexes, or the basic mechanisms of the visual system. Here, other levels of analysis are both more pertinent and useful. And it should also be clear that neuropsychological considerations are often useful in behavioral studies precisely because they help us specify psychological processes, providing another epistemic access point to this important but so often measurement-resistant aspect of the natural world.

Basic Psychological Needs

Sheldon et al. added a fourth sublevel to the three suggested by McAdams, namely, the sublevel of *basic psychological needs* (Deci & Ryan, 2000), which they place as the foundation of the now four sublevels that make up the personality level of analysis. Within SDT we have taken a strong stand on the matter of psychological needs, defining them as essential nutrients for healthy development and psychological well-being and asserting that they are universal. Specifically, we have proposed that all people have the needs for competence, autonomy, and relatedness. Thus, we maintain that everyone, regardless of gender, race/ethnicity, culture, or socioeconomic status, and regardless of whether they value competence, autonomy, and relatedness, must have each of these needs satisfied in order to develop and function optimally. Initially, we formulated this proposition because we had found it to be the most effective and parsimonious way of explaining a range of phenomena that emerged from research on intrinsic and extrinsic motivation (see, e.g., Ryan, 1995). Subsequently, we have tested the importance and generality of these needs and have found that, across many eastern and western cultures, these needs are essential for psychological health in each country we have studied (e.g., Chirkov, Ryan, Kim, & Kaplan, 2003), and we were pleased to see the new evidence on this matter provided in Sheldon et al.'s target article. As well, we have continually uncovered additional phenomena for which the concept of these three basic psychological

needs has been able to provide meaningful interpretations (e.g., Ryan, Sheldon, Kasser, & Deci, 1996). These include not only the results of basic research but also the results of research in many life domains, from education and parenting, to health care and psychotherapy, to sport and videogames, to work, politics, and religion (e.g., Deci & Ryan, 2008).

The basic psychological needs have several functions. First, they, and their derivatives, explain what people move toward. That is, the basic needs provide the energy and direction for people to engage in activities that satisfy these needs. If, however, people cannot get a basic need satisfied, they are likely to engage in activities that satisfy what in SDT we call *need substitutes*, which do not provide real satisfaction of the need itself but are somewhat satisfying and may be the best people can do at that time. For example, individuals tend to move toward contact with other people to satisfy their relatedness need, but if they feel unable to make such contact they might watch a television show and have a kind of surrogate relationship with a character on the show or an actor playing a character (e.g., Derrick, Gabriel, & Hugenberg, 2009). Although there is no evidence that this would really satisfy their relatedness need and promote well-being, it can feel good to the TV watcher because it serves as a substitute for relatedness that was derived from relatedness thwarting.

Second, needs allow informed observers to understand whether people will flourish or wither. In other words, if observers know that people are experiencing satisfaction of the basic psychological needs, the observers can predict reliably that the individuals will likely experience healthy development and well-being, whereas if the people are experiencing thwarting of the needs the observers have a reliable predictor of some pathology or maladaptive functioning.

Third, by understanding the functioning of these three needs, interventionists (e.g., parents, teachers, managers, physicians) will be able to evaluate what aspects of a social context will significantly enhance versus undermine individuals' engagement and effectiveness within the context, whether the context is an immediate proximal context, a developmental context that exists over time, or a more distal context such as culture. Furthermore, being able to predict what contextual factors lead to individuals' enhancement versus diminishment allows for targeted creation of those conditions shown to improve functioning within that context. Stated differently, by knowing that individuals must experience satisfaction of the basic psychological needs to prosper psychologically and perform effectively, people will be able to create social contexts—at home, at school, at work, at the health clinic—that will support flourishing for people who are in those contexts. Any contextual factor that is likely to satisfy rather than thwart one of the basic needs can be

expected to contribute to well-being, unless, for some reason, satisfaction of the one need precludes satisfaction of the others, as for example is the case with parental conditional regard (Roth, Assor, Niemiec, Ryan, & Deci, 2009).

Needs as Key Elements Among Levels of Analysis

As implied in the last paragraph, the basic psychological needs are not only predictors of performance and well-being outcomes at their own sublevel of analysis, they also play a key mediational role when considering the effects on outcomes of variables at other levels of analysis. For example, Sheldon et al. reported evidence that the relations between the cultural-level variable of individualism and the subjective well-being of individuals from different cultural groups were fully mediated by satisfaction of the participants' three basic psychological needs, and studies by other investigators have made similar points (e.g., Chirkov, Ryan, & Willness, 2005).

Further, basic psychological needs are also mediators in relations that involve interplay among levels and sublevels of analysis in predicting both sublevel variables and other behavioral and well-being outcomes. For example, social-context variables, which can be considered at either the social relations or the culture levels, have an important effect on the development of individual differences such as causality orientations (Deci & Ryan, 1985) precisely because the contexts affect satisfaction versus thwarting of the basic psychological needs over time as the individuals grow and mature. Stated differently, the needs (i.e., the lowest of the four sublevels of personality) mediate the impact of social relations and/or culture (each its own level above personality) on the development of individual differences (a sublevel of personality positioned second from the bottom in the four sublevels). Similarly, social contexts and individual differences each play a role in the development of self (the top of the four sublevels of personality) because both the contexts and the individual differences affect basic psychological need satisfaction (Deci & Ryan, 1991; Ryan & Deci, 2003). And as yet another example of the pivotal role of basic psychological needs, satisfaction versus thwarting of the needs mediates the links from both social contexts and individual differences to such outcomes as performance and well-being (e.g., Baard, Deci, & Ryan, 2004). In short, SDT's basic psychological needs for competence, autonomy, and relatedness, which Sheldon et al. made foundational among the four sublevels of personality, are extremely important both for the development of each of the other three personality sublevels (viz., individual differences, motivations, and self) and for mediating the effects of these other

sublevels, as well as other higher levels (culture and social relations) on a wide range of behavioral and well-being outcomes.

Aspirations, Needs, and Well-Being

To illustrate some of these points, we present a brief discussion of SDT research related to the idea of aspirations or life goals (Kasser & Ryan, 1993; Ryan et al., 1996), which would be contained within the motivation sublevel of the personality level of analysis. People differ in the life goals they hold for themselves that guide their decisions and behaviors over the long term. Although there are many such goals that might be examined, Kasser and Ryan (1996) focused primarily on six: amassing wealth, becoming famous, appearing attractive, growing as a person, contributing to the community, and developing meaningful relationships. The researchers found first that, using factor analysis, these six aspirations (as well as others) loaded on two factors. The first three aspirations just listed loaded on one factor that was labeled *extrinsic aspirations*, and the last three loaded on a second factor labeled *intrinsic aspirations*. The structure of these goal contents was found to be consistent across 15 cultures with respect to where they fell along the extrinsic to intrinsic dimension (Grouzet et al., 2005), although surely it is the case that different cultures have differing degrees of satisfaction of the basic needs, so the mean levels of the aspirations' importance would be different in the various cultures.

Kasser and Ryan (1996) posited that people would consider the intrinsic aspirations to be stronger or more important to the degree that they had experienced need support during their important developmental years. In contrast, extrinsic aspirations, which focus on external indicators of worth and are need substitutes that reflect a sense of inner insecurity, would have developed from the basic psychological needs having been thwarted during those years. A study by Kasser, Ryan, Zax, and Sameroff (1995) found that teenagers who had less-need-supportive mothers rated the importance of amassing wealth as very high relative to the intrinsic aspirations. Similarly, Williams, Cox, Hedberg, and Deci (2000) found that when high school students perceived their parents as being low in autonomy support (and thus were *not* need supportive) the students placed more importance on extrinsic relative to intrinsic aspirations. Attainment of these extrinsic aspirations would likely have allowed the adolescents to have positive feelings associated with experiencing attainment of need substitutes such as social recognition and attractiveness.

Further, Kasser and Ryan (1996) characterized the difference between extrinsic and intrinsic aspirations in terms of the intrinsic ones being instrumental to basic

need satisfaction and the extrinsic ones being obstructive to basic need satisfaction. Accordingly, it would be expected that pursuit and attainment of extrinsic aspirations would be associated with psychological ill-being rather than well-being, whereas pursuit and attainment of intrinsic aspirations was expected to be associated with psychological well-being. The idea here is that not only does need thwarting promote placing greater importance on extrinsic relative to intrinsic aspirations, but strongly holding extrinsic aspirations is likely to lead people to behave in ways that tend to thwart further satisfaction of the basic needs. For instance, being strongly focused on amassing wealth may lead people to work very long hours, which would interfere with their experiencing relatedness to family as well as a sense of choice and psychological freedom in the face of monetary contingencies.

Indeed, Kasser and Ryan (1996) found that the strength of extrinsic (relative to intrinsic) aspirations was associated with poorer psychological health, indexed by both low levels of self-actualization and vitality and high levels of depression, anxiety, and somatic symptoms. Further, Sheldon, Ryan, Deci, and Kasser (2004) found that strong extrinsic aspirations were negatively associated with subjective well-being. Williams et al. (2000) found that teenagers with strong extrinsic aspirations tended to engage in more high-risk behaviors such as smoking tobacco and marijuana, using alcohol, and having early sexual intercourse. Finally, and perhaps even more important, research by Niemiec, Ryan, and Deci (2009) found that, over a 1-year period, people who attained greater intrinsic aspirations also evidenced enhancements of psychological health and well-being but that those who attained greater extrinsic aspirations showed no enhancement of well-being and instead showed greater evidence of ill-being. Further, these changes were mediated by changes in the degree of satisfaction versus thwarting of the basic psychological needs.

To summarize our brief discussion of aspirations while also pointing to how various levels and sublevels of analysis come into play, (a) these life goals are individual differences at the motivation sublevel of personality; (b) there are two categories of aspirations referred to as intrinsic and extrinsic; (c) the aspirations develop because people have ongoing early experiences of the basic psychological needs, which are at the needs sublevel of personality, being either satisfied (for intrinsic) or thwarted (for extrinsic); (d) the ongoing developmental need satisfaction versus thwarting is to a large extent a function of the social context being accepting and encouraging rather than cold and controlling at the social relations level; (e) societal factors (the culture level) can affect the degree to which people's needs are satisfied versus thwarted and thus whether intrinsic or extrinsic aspirations develop more strongly, but the structure that places the specific aspirations along

the intrinsic versus extrinsic dimension is consistent across cultures; (f) pursuit and attainment of the intrinsic life goals are associated with psychological health and well-being because they satisfy the basic psychological needs; and (g) pursuit and attainment of the extrinsic life goals, which are need substitutes that developed in contexts that thwarted basic psychological need satisfaction, are associated with ill-being rather than well-being because the pursuit and attainment of extrinsic goals tends to interfere with basic need satisfaction.

Summary and Conclusions

We find the organization of levels of analysis provided by Sheldon et al. to be interesting and useful for organizing research, particularly research that involves multiple disciplines or levels of analysis. Like Sheldon et al., our own research focuses mainly, though not exclusively, on the top three levels of analysis—personality, social relations, and culture—and we agree that differentiating the level of personality into sublevels has utility for people doing research at that level. We also concur that adding basic psychological needs as a fourth sublevel within personality is extremely important, because research has indicated that the satisfaction versus thwarting of these basic needs serves successfully to mediate the effects of variables at each sublevel of personality and at the higher levels of social-relations and culture on both behavior and well-being outcomes as well as on the development of variables within other levels or sublevels.

Ultimately understanding an explanation, as well as predicting, controlling, and making practical interventions, depend upon both openness to coordination in levels and sublevels of analysis as well as thoughtful emphasis on regnant processes. What constitutes a regnant level of analysis, of course, varies with the phenomena under consideration. By bringing attention to this problem Sheldon et al.'s discussion encourages a thoughtful, even mindful, approach to this issue by behavioral scientists, and it serves as a healthy contrast to reductionisms of all kinds.

Note

Address correspondence to Edward L. Deci, Department of Clinical and Social Sciences in Psychology, Box 270266, University of Rochester, Rochester, NY 14627. E-mail: deci@psych.rochester.edu

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