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Guest Editorial

On Deconstructing Commentaries Regarding Alternative Theories of Self-Regulation

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The present commentary addresses issues raised in four replies to my editorial on the functional properties of perceived self-efficacy (Bandura, 2012). In my comments on the paper by Jackson, Hill, and Roberts (2012), I discuss the arbitrary nature of "disposition" and question whether an essentially atheoretical computer-structured inventory based on a mixture of superficially assessed habitual behaviors constitutes a theory of personality. In another set of comments, which speak to the paper by Vancouver (2012), I identify two major flaws in Powers' (1991) perceptual control theory and document experimental compromises in Vancouver's efforts to demonstrate that goals and self-efficacy operate counteractively. My comments on the Yeo and Neal (2013) paper center on their unsuccessful efforts to explain and verify the proposition that general and specific self-efficacy work at cross-purposes. In response to Bledow's (2013) entry, I address the conceptual ambiguity of his theory of unconscious self-motivation, misconstruals of the role of self-efficacy in the process of change, and marginalization of the functional role of consciousness in human behavior.

Keywords: *affect/emotions; microtopics; motivation; personality; agency theory; macrotopics; goal setting*

In a publicized, lengthy commentary in this journal, I addressed theoretical, methodological, analytical, and interpretational aspects of research on perceived self-efficacy (Bandura, 2012). Readers were invited to submit commentaries on this article. Four sets of replies were published from different theoretical perspectives. They included Powers' perceptual control theory, a trait theory with opposing functional self-efficacy properties, Big Five personality theory, and an approach that marginalizes the role of consciousness in human functioning. The present article addresses these commentaries.

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Conceptual Flaws in Perceptual Control Theory

In 1989, I published an article in the *American Psychologist* on the nature and function of human agency within the conceptual framework of triadic reciprocal causation (Bandura, 1989). The role of self-efficacy within this theoretical framework had bearing on control theories founded on a cybernetic model emphasizing error correction through negative feedback loops as the driving force. Powers (1991) submitted a brief commentary to the *American Psychologist* contending that self-efficacy has negative effects on performance. Self-efficacy was never a part of Powers' control theory. The alleged negative effects were a speculation based on two false premises. They include the assumption that self-efficacy and goals work independently and at cross-purposes. The second assumption is that individuals slacken their efforts as they draw nearer to the goal.

Powers argued that motivation is regulated by two optimistic belief systems that operate independently and counteractively. Optimistic goal beliefs raise effort by increasing the discrepancy in the negative feedback loop, thereby requiring greater effort to realize the goal. In contrast, optimistic self-efficacy beliefs shrink the perceived discrepancy between performance and the goal comparator. Under a reduced discrepancy, individuals allegedly slacken their efforts, thereby undermining their performance attainments. Control theory posited positive goal effects but negative self-efficacy effects on performance.

Research in both social cognitive theory (Bandura, 1997, 2013) and goal theory (Locke & Latham, 1990, 2013) refute the claim that goals and self-efficacy operate independently and at cross-purposes. Rather, people's beliefs in their capability influence the goals they set for themselves and their commitment to them in the face of difficulties. As these findings show, self-efficacy changes the goal comparator. The higher their self-efficacy, the higher the goals people set for themselves.

The self-efficacy determination of goals is the nemesis of perceptual control theory. While it well established that self-efficacy heightens effort by raising goals, in Powers' theory high self-efficacy simultaneously diminished effort by shrinking perceived discrepancy. Because performers have only one body, self-efficacy cannot be expanding and shrinking discrepancies simultaneously. This is analogous to walking right and left concurrently. Powers did not explain how the negative feedback loop can operate if its discrepancy is being simultaneously expanded and shrunk. Social cognitive theory is spared the ontological gridlock because self-efficacy and goals work together harmoniously rather than at cross-purposes.

The second flaw in Powers' theory addresses the core assumption that effort declines the closer one gets to the goal, thereby diminishing the goal discrepancy. In animal studies of effort goal-gradients, experimenters equipped fleet-footed rodents with tiny harnesses tethered to a device that measured how hard they pull at varying distances to the goal. The closer they got to the goal, the harder they pulled. Dollard and Miller (1950) extended this effort goal-gradient to human motivation and performance. In studies of frustration effects, individuals blocked near a goal respond more vigorously than when they are thwarted some distance from it (Bandura, 1973).

Goal discrepancies are smaller under proximal subgoals than under distal final ones. Contrary to prediction from perceptual control theory, people exert higher effort and realize higher performance attainments under proximal subgoals leading to a distal goal than under a distal final goal alone (Bandura, 1991; Bandura & Schunk, 1981; Sun & Frese, 2013).

Cross-country skiing is one of the most grueling Olympic sports. The Norwegian superstar Jon Bjorkheim described the superior motivating power of proximal goals:

I cheat a little. I look ahead, maybe to the top of rise, and tell myself that it's near the end of the course. When I get up there, I cheat again by looking ahead and again making believe. It usually keeps me going at my best speed.

Never bet on an athlete on a track team who runs according to Powers' theory. Ever closer ever slower.

When people fall just short of their goal on a taxing activity, there is no uniform effect on their subsequent level of effort (Bandura & Cervone, 1986). However, self-efficacy predicts the variability in goal setting and effort with control for past performance. Those who doubt their capabilities to do as well again lower their goal with decline in performance. Those who believe they can achieve the goal when they try again adhere to it and raise their level of performance slightly. Those who believe they can do even better adopt a higher goal challenge with corresponding heightening of effortful performance. In the latter mind-set, it is self-efficacy for the elevated goal challenge rather than the one they just missed that predicts the increased performance.

On Powers' assumption that goals and self-efficacy operate independently, Vancouver (2012) proclaimed the superiority of control theory as a balanced theory because it predicts both positive effects via goals and negative effects via self-efficacy. In fact, it is a gridlocked theory, not a balanced one. To achieve this alleged positive effect one has to focus only on the goal motivating half of Powers' theory while ignoring the alleged efficacy demotivating half.

Vancouver and his collaborators set out to verify Powers' predictions that goals enhance performance, whereas self-efficacy impairs it. This effort failed at the outset with resultant experimental machinations to produce the dual opposing effect. In the initial studies, self-efficacy correlated negatively with performance, but contrary to Powers' theory, self-set goals also correlated negatively with performance. In a partisan interpretation of findings, Vancouver, Thompson, and Williams considered the goal effect as spurious but the efficacy effect as real:

We think it is clearly not causal for personal goals because we cannot think of a mechanism. On the other hand, because of control theory and the mechanism described by Powers (1991), we do think it is reasonable to suggest self-efficacy beliefs had a causal influence in the negative relationships found. (2001: 618)

They tried assigned goals, but both self-efficacy and assigned goals also correlated negatively with performance. The dual negative effects were an artifact of the structure of the laboratory task (Bandura & Locke, 2003).

In subsequent research, Vancouver and his collaborators discarded the troublesome goals but at the cost of rendering control theory untestable (Vancouver, Thompson, Tischner, & Putka, 2002). The control system cannot function without a goal comparator. Under criticism for jettisoning goals in testing predictions from control theory, they reinstated the goal but used a spurious one (Vancouver, More, & Yoder, 2008). They told participants to do their best without specifying any goal performance level. The goal comparator was left in functionless

ambiguity. This is analogous to programming a thermostat to do its best in regulating room temperature. The bottom line is that none of this research provides support for Powers' theory that self-efficacy and goals operate at cross-purposes.

Trait Self-Efficacy With Opposing Functional Properties

Social cognitive theory is founded on an agentic perspective operating through forethought, self-regulation, and self-reflection as core features of human agency (Bandura, 2008a). Within this agentic theoretical framework, judgments of one's capabilities represent one form of the self-reflection feature. In social cognitive theory, self-efficacy is assessed by domain-linked measures scaled in terms of different levels of performance demands that individuals believe they can realize. Some theorists have substituted this dynamic self-belief with a general trait that is assessed by a one-size-fits-all measure (Chen, Gully, & Eden, 2001; Schwarzer & Jerusalem, 1995; Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs, & Rogers, 1982).

Yeo and Neal (2006) set out to verify the theory that specific self-efficacy reduces performance, whereas general self-efficacy enhances it. Positing that self-efficacy simultaneously strengthens and weakens performance was not a good omen at the outset. It is reminiscent of Vancouver's failed efforts to demonstrate that self-efficacy and goals have opposing effects, with self-efficacy reducing effort and goals enhancing it.

I know of no coherent theory that contends that specific and general self-efficacy have opposing functional properties. Yeo and Neal had to enlist different theories for their conflicting hypotheses. Referencing the Vancouver et al. (2001) predictions from control theory, Yeo and Neal (2006) hypothesized that specific self-efficacy will affect performance negatively. Referencing the work of Eden (1988), they hypothesized that general trait self-efficacy operates positively as a "buffer" against specific perturbations. It allegedly does so because, as a stable trait, it is relatively immune to negative situational influences. The authors do not explain why specific self-efficacy—which supports persistence and resilience in the face of difficulties and bolsters adaptive affect self-regulation (Bandura, 1997)—cannot perform the buffering function as well. The alleged buffering benefits of general self-efficacy are speculative, whereas the motivational and affect-regulation benefits of specific self-efficacy are empirically verified (Bandura, 1997, 2013).

Confounded Experimental Design

Yeo and Neal (2006) present two hypotheses concerning self-efficacy effects, with a confounded experimental design. The hypothesis for the negative effects of specific self-efficacy is tested at the within-person level, whereas the positive effect for general self-efficacy is tested at the between-person level. The experimental design is further confounded, with specific self-efficacy linked to individual performances, whereas general self-efficacy is linked to individual performances lumped together.

Yeo and Neal explain why they did not include a hypothesis on the benefits of general self-efficacy at the specific performance level: "General self-efficacy varies only between individuals, so it can predict only between-person variance in performance" (2013: 1392). I know of no psychological variable in the social sciences in which its posited effects are untestable at the individual level at which it works because it is invariant.

Partializing Self-Efficacy From Itself

Yeo and Neal (2006) found that self-efficacy is positively related to performance, but the relationship changes to a miniscule negative one when the mean of specific self-efficacies is added as a control for specific self-efficacy. The aggregate self-efficacy is simply an arithmetic mean of itself, not a different conceptual variable with its own functional properties. This is a peculiar control strategy in which self-efficacy, which is autocorrelated, is partialled out from itself. It makes no theoretical sense to partial out the influence of the future in gauging the influence of the present.

On Resource Allocation

In their rejoinder, Yeo and Neal (2013) explain that “resource allocation,” billed as a theoretical dynamic perspective, is really the governing mechanism although it never appears in the hypotheses. In this view, people allocate low cognitive resources on easy tasks, they work harder at resource allocation on increasingly more difficult ones, but they lower their goals or do something else when they repeatedly fail to muster the resources needed to fulfill task demands. There is little theoretically distinctive about the notion that individuals vary their effort as a function of task difficulty.

The dynamics apparently come into play when self-efficacy is added to the ordinary process. According to Yeo and Neal (2013), low self-efficacy signals a need for more cognitive resources, which spurs individuals to mobilize resources that increase their self-efficacy and performances. In point of fact, people are not energized and inspired by low belief in their capabilities. A large body of evidence shows that individuals who distrust their capabilities set low goals for themselves, quickly give up trying in the face of difficulties, and settle for mediocre performances (Bandura, 1997). These types of negative effects of low self-efficacy are not conducive to building resources for allocation.

Yeo and Neal (2013) offer no theoretical rationale for why low self-efficacy is energizing. Rather, they construct a cheerful scenario in which individuals are animated and inspired by low self-efficacy. The theory championing the motivating power of low self-efficacy is Powers’ control theory. Although Yeo and Neal disclaim it, their predicted effects look a lot like Powers’ framed in cognitive allocation terms rather than motivational ones. Low self-efficacy expands the goal discrepancy, which mobilizes individuals to muster cognitive resources performance attainments. However, the goal nemeses that plagued Vancouver reappear in the Yeo and Neal study. Low self-efficacy gives rise to low self-set goals that do not spur one to high achievement.

Research on the effects of self-efficacy on quality of cognitive functioning is highly relevant to cognitive resource allocation. In these studies, self-efficacy is experimentally manipulated to differential levels by telling participants that they performed at a high or low percentile rank according to a bogus norm regardless of their actual performance. In a study by Bouffard-Bouchard (1990), students whose sense of efficacy was illusorily raised set higher goals for themselves, used more efficient problem-solving strategies, and achieved higher academic performances than students whose self-efficacy was illusorily lowered.

Krueger and Dickson (1994) studied how managers cognitively process information about opportunities for new business ventures. Those whose decisional self-efficacy was arbitrarily raised focused on opportunities worth pursuing, whereas those whose self-efficacy

was arbitrarily lowered dwelled on the risks to be avoided. These diverse efficacy-based orientations would result in substantially different allocations of resources in the pursuit of business ventures. How disappointing to see the opportunity to integrate self-efficacy theory with resource allocation squandered on trying to get self-efficacy to work at cross-purposes.

Issues of Scientific Concern

Yeo and Neal (2013) question the appropriateness of my citing unpublished findings by them. They report that they withdrew the study because it was rejected for publication. Their claim that the findings of this study were never published is erroneous. I did not cite unpublished findings. A summary of the study and the main findings were published as a brief supplement in the *Australian Journal of Psychology* (Neal & Yeo, 2003). In fact, Yeo includes it within her meta-analysis (Sitzmann & Yeo, 2013).

The study by Yeo and Neal (2006) included two personal factors, negative affect and self-efficacy, that were measured before each trial for a total of 29 trials. However, the negative-affect variable is never reported in the published article and not included in the data analysis. Negative affect was not an incidental variable measured repeatedly along with self-efficacy. In data provided by Yeo and Neal, negative affect correlated negatively with self-efficacy and performance. These correlations indicate that the unreported negative-affect variable is not an irrelevant disposable factor in the study.

Yeo and Neal (2013) take issue with my statement that negative affect was included in the study but not reported. They state, "This claim is incorrect. Our analyses were conducted exactly as reported in the paper" (1391). This is a diversion. I am not claiming that their statistical analysis with the deleted affect variable was not conducted as reported. I am simply stating the fact that they neither acknowledged deletion of the affect variable nor reported its effects on the findings in the published study (Yeo & Neal, 2006). Therefore, there is a reason to question the scientific credibility of the published findings.

Yeo and Neal (2013) misrepresent my phobia studies as confined to between-person design. In fact, they all included analyses of within-person changes. They begin their commentary with an example showing that the correlation between foreign birth and literacy is positive at the state level but negative at the individual level. This supposedly shows that between-person research commits "ecological fallacy." The issue in this example is not level of analysis but an illustration of how mindless aggregation, in which differences within states are much greater than between them, can yield weird correlates at different levels of analysis. I posed the following question to a prominent data analyst: "If you were to compare between-person and within-person correlations across a variety of studies, how often would you find opposing effects across levels of analysis?" He replied, "If I bet heavily on opposing effects, I would end up penniless."

We conducted experiments in which the relationship of self-efficacy altered experimentally and performance was examined using within-person and between-person designs (Bandura, Reese, & Adams, 1982). The studies yielded the same directional correlations. The higher the levels to which self-efficacy was raised, the greater the performance attainments with control for past performance. The comparable relationship across levels of analysis indicates that the functional form was not changed with aggregation. Yeo and Neal misrepresent these studies as measuring "static differences between individuals" (2013).

In an effort to downgrade between-person research, Yeo even ignores findings from one of her own studies yielding similar directional relationships across levels of analysis (Koy & Yeo, 2008). Within-person and between-person analyses also yielded similar directional relations in research by Whyte and Saks (2007) on commitment to failed ventures. Many important aspects of life are not amenable to laboratory experiments. As explained elsewhere (Bandura & Locke, 2003), full understanding of causal relations requires converging evidence from divergent methodologies.

Meta-Analysis of Self-Efficacy Effects Based on Deficient Self-Efficacy Measures

In several places in their reply, Yeo and Neal (2013) refer to the results of a meta-analysis conducted by Sitzmann and Yeo (2013) in support of their arguments. Because of these claims, the meta-analysis warrants brief comment as well. Sitzmann and Yeo set out to test the predictiveness of self-efficacy theory and control theory with a meta-analysis of self-efficacy effects at the within-person level. They contrast self-efficacy theory (Bandura, 1977), which they erroneously claim posits only positive effects, with Powers' control theory, which they claim predicts positive, negative, and null effects. This is an inaccurate attribution to Powers. He hypothesized only a negative self-efficacy effect. Nor did Powers specify any conditional factors. The positive effect is Vancouver's addition in which he focuses on only one half of Powers' control theory. I assume the null effect is Sitzmann and Yeo's addition because neither Powers nor Vancouver has done so. Proclaiming that one's theory predicts no effects borders on conceptual parody. What are the postulates and boundary conditions for a theory that predicts no effects? If control theory predicts positive, negative, and null effects, it is not falsifiable by any type of evidence.

Although billed as a meta-analysis of self-efficacy effects, with a few exceptions, none of the Sitzmann and Yeo (2013) studies measured the construct as specified by self-efficacy theory. Within this conceptual framework, a self-efficacy scale contains the full range of challenges in a given activity domain. For each level of challenge, participants rate whether they can surmount it and the strength of their belief that they can do so. The strength rating is important because the probability of acting on one's self-efficacy belief varies depending on its strength (Bandura, Adams, & Beyer, 1977).

In a third of the studies in Sitzmann and Yeo's (2013) meta-analysis, self-efficacy was measured on a bipolar Likert scale. As explained elsewhere, a bipolar scale is appropriate for phenomena that have positive and negative values, such as attitudes and likes and dislikes (Bandura, 2012). However, this type of scale is inappropriate for measuring self-efficacy because a judgment of total inability is at zero value with no lower negative gradations. One cannot be any more inefficacious than totally inefficacious.

Sitzmann and Yeo (2013) never describe the content of the self-efficacy measures in the selected studies. Rather, they cloak them in uninformative nondescript labels only as "unipolar" or "bipolar." The dual nondescript labels mask what is actually being measured, and so there is no way of evaluating the quality of the database. It turns out that, under these nondescript labels, all kinds of things were being called self-efficacy that have little likeness to how the construct is construed and measured in self-efficacy theory. Here is a sample of the questionable measures, which are usually a brief sentence: Expected letter grade on the next quiz;

predicted perfect score on a quiz; perceived task difficulty; vague reference to performance without specifying any performance level, for example, “I have what it takes to perform well,” “I feel confident to perform well on the next block,” and “I feel confident I can learn statistics.” Another study substitutes the Chen et al. (2001) general self-efficacy scale, which is inappropriate for testing a social cognitive theory of the functional properties of self-efficacy.

The Sitzmann and Yeo (2013) meta-analysis also includes a mysterious set of studies in which the self-efficacy variable is never even mentioned. It is absent from the conceptual rationale in the published research. It never appears in the set of hypotheses. It is excluded from the Measures section on how it was measured. It is neither a variable in the reported data analysis nor discussed in the interpretation of the findings of the studies. This set includes a study by Sitzmann and Ely (2010) and three studies by Yeo and her collaborators: Yeo and Neal (2004, 2008) and Yeo, Loft, Xiao, and Kiewitz (2009). In this subset of studies, there is no way of knowing how self-efficacy was measured.

The contribution to knowledge of Sitzmann and Yeo’s (2013) meta-analysis, based on a peculiar mixture of deficient measures of self-efficacy, is paltry. There are no self-efficacy effects. Moreover, there are no negative effects as predicted by Powers’ control theory as claimed by Vancouver and Yeo (2006) in their studies. Nor is there any empirical support for the methodological claim that within-person analysis discloses negative self-efficacy effects on performance. So, there is no joy for the advocates of Powers’ control theory either. In their partisan Discussion section, Sitzmann and Yeo focus solely on self-efficacy but remain silent on the disconfirmation of Powers’ control theory. Nor did the search for moderators yield much even with questionable use of one-tailed statistical tests of significance. Superficial tasks of questionable relevance account for over two thirds of the performance tasks in this meta-analysis. On such brief tasks with deficient measures of self-efficacy, the best predictor of how participants will do is what they have just done. In acknowledging the limitations of their meta-analysis, the authors should have mentioned that most of the studies never measured the self-efficacy construct being meta-analyzed.

On Marginalizing Consciousness

In his commentary, Bledow (2013) addresses three lines of psychological theory. These include Kuhl’s (1994) categorization of people into two types depending on how they manage stress. It includes state-oriented individuals who dwell on their stressful experiences and action-oriented ones who focus on possible solutions. The second line of research centers on unconscious priming (Bargh & Ferguson, 2000). And the third line of theorizing is Solomon’s (1980) opponent-process model as it might apply to fluctuations in self-efficacy every few minutes in the laboratory studies. However, Bledow provides no overreaching theory that integrates these disparate conceptual approaches. However, much of Bledow’s discussion centers on the metaphoric iceberg, in which the tiny conscious tip is functionally marginalized.

Bledow (2013) endows the mind—which is a concept not an entity—with a large repertoire of unconscious contents that are mobilized by unconscious processes. However, there is no explanation of what the unconscious contents are and how and why they remain submerged. The processes are said to be energized by unconscious self-motivation. However,

there are no specifications of the nature of self-motivation and how it works. Nor does Bledow provide a conception of the self, which is doing the motivating unconsciously. Social cognitive theory construes self-referent processes within an agentic conceptual framework of the self (Bandura, 2008b).

Consciousness is a vehicle for acquiring knowledge and managing one's life. It also serves as the vehicle for generating one's intrapsychic life that can be a source of enjoyment or misery depending on its nature. It is fashionable nowadays to champion the supremacy of the unconscious mind and to downgrade the conscious one. So why do humans have consciousness that dominates their entire waking life? If consciousness is a functionless epiphenomenon, then evolution made a colossal mistake. Over the course of evolution, human forebears evolved into a sentient species. The evolved symbolic ability to comprehend, predict, and alter the course of events confers considerable functional advantages. The evolutionary emergence of the neuronal mechanisms for language and deliberative thought enabled humans to break the deterministic chain between environmental events and behavior (Bandura, 2008a; Ismael, 2007). Symbolic ability also enables humans to transcend even their biological limitations. For example, humans have not evolved morphologically to fly, but they are soaring through the air even in the rarified atmosphere of outer space at breakneck speeds. Agentic inventiveness transcended genes and biological design in getting them airborne.

Bledow (2013) uses the iceberg metaphor in his marginalization of consciousness. In his view, the vast submerged unconsciousness is the driving force of human behavior. The conscious tip of the iceberg is but a minor reflection of unconscious processes. The tip may be small in size but it is large in its fundamental role in human self-development adaptations and change. Thank goodness that this tip is conscious and selectively small. This is where the mental work is performed and where people spend much of their waking life. Were it swamped with a vast load of information irrelevant to the purpose at hand at any given time it would be functionally paralytic. Humans come equipped with executive functions and a short-term working memory that enables them to selectively retrieve information from the long-term memory store and increasingly from the Internet. The information is manipulated in reasoning, comprehension, and skill development. The set of commentaries under discussion are undoubtedly the product of a lot of conscious deliberation rather than automatic writing by an unconscious mind.

The iceberg is the metaphor of yesteryear. In the digitalization of information in this electronic era, immense amounts of information are being stored on the Internet on virtually any topic and instantly retrievable with the click of a mouse. In contemporary functioning, working memory operates on the information stored outside the brain on the Internet not just in the long-term memory store. People are now spending most of their waking life processing information in the symbolic environment of the cyberworld. The symbiosis of conscious mental activity and instant access to the immense repository of information on the Internet is transforming the level and nature of human functioning.

Life in the cyberworld transcends time, distance, place, and national borders and alters our conceptions of these concepts. Instant communication worldwide has also transformed the nature, reach, speed, and loci of human influence. Miniaturized wireless devices make the vast symbolic environment portable. People can take it with them and actualize it at any time in any place. They are sharing apps that offer guidance in diverse spheres of life. They are doing all of this *consciously*.

These evolving realities provide people with extensive opportunities to influence agentically their self-development and to shape the course their lives take (Bandura, 2002). Building people's sense of efficacy to manage the information technology enables them to construct knowledge through the Internet effectively and self-satisfyingly (Debowski, Wood, & Bandura, 2001). It should be noted in passing that much of what is stored in the submerged metaphoric "iceberg" was put there by mindful design and purposed effort.

Subconscious Learning Through Social Modeling

Social modeling is one of the hallmarks of social cognitive theory (Bandura, 1986). It is the best vehicle for influencing behavior subconsciously. Indeed, my first experiment conducted over 50 years ago characterized social modeling as a process of incidental learning (Bandura & Huston, 1961). It is through incidental social modeling that many attitudes, values, and styles of behavior are acquired. Many decades later, advocates of unconscious causation through priming corroborated that social modeling can alter behavior without awareness (Cheng & Chartraud, 2003).

Research conducted within the framework of social cognitive theory 25 years earlier also verified unconscious influence on self-efficacy beliefs, long before priming came into vogue. Cervone and Peake (1986) and Peake and Cervone (1989) biased self-efficacy judgment using an anchoring influence completely irrelevant to self-efficacy as the subconsciousness prime. In both studies, the higher the primed self-efficacy, the stronger the persistence on difficult tasks. In mediational analyses, the priming influence affected performance through its impact on conscious self-efficacy beliefs.

It is easy to prime subconsciously small changes in preexisting behavioral tendencies. It is a different matter in the acquisition of complex competencies. Complex skill acquisition requires a lot of cognitive guidance. Subconscious priming alone will not get one to be a virtuoso violinist, an airline pilot, or a graceful ballerina.

Interplay of Conscious and Subconscious Control Systems

Social cognitive theory addresses interaction between subconscious and conscious regulators of behavior in terms of a multilevel dual-process model (Bandura, 1986). The relative influence of these two levels of regulation varies depending on whether behavior is being acquired or preexisting behavior is being activated. In early and intermediate phases of learning, the formation of cognitive representations of new competencies accelerates the acquisition process (Carroll & Bandura, 1990). After competencies are acquired, habitual patterns of behavior are routinized and regulated at the perceptual-motor level. Thought is freed for other purposes. However, if habitual behavior fails to produce desired results, conscious engagement comes back into play to identify the source of the problem and to devise better ways of handling task demands. After more functional behavior is developed, control reverts to the routinized perceptual-motor level. Social cognitive theory specifies how behavior is rendered unconscious through a process of automatization (Bandura).

Disengagement of thought from proficient action has considerable functional value. If one had to think about every routinized activity before carrying it out, it would needlessly

consume most of one's attentional and cognitive resources. If mindlessness is carried too far, however, it can deter adoption of more functional competencies and dampen innovativeness (Langer, 1989).

The shift across levels of consciousness applies to self-efficacy as well. During acquisition of new competencies and management of new situational demands, individuals assess their self-efficacy, on the basis of which they set goals for themselves, make choices, and mobilize the necessary efforts and resources. After the skills are acquired and routinized, they are performed without having to reaffirm one's self-efficacy for them. However, should the routinized behavior cease to be effective, individuals reassess their self-efficacy through mindful processes for new competency development.

Throughout his commentary, Bledow (2013) invokes "unconscious processes" as the overriding forces governing human behavior. But he never tells us what they are. Nor does he specify any mechanisms that link the unconscious to the conscious. He mentions a "dynamic interaction" between them. However, the portrayal appears conceptually contradictory. On one hand, they are apparently functionally interactive. On the other hand, conscious events are dismissed as epiphenomenal. The so-called dynamic interaction looks very much like bottom-up, unidirectional unconscious determinism.

Is Self-Motivation Contingent on Prior Change?

Bledow (2013) asserts that self-efficacy does not affect motivation unless it changes. He makes the same argument for goals. Obviously, if individuals raise their sense of efficacy and accompanying goals, they will enlist the means and effort to realize the new level of performance. What is controversial is the claim that a mental entity, such as a state, cannot affect action. Change is simply a movement from one state or condition to another. Change is a process, but it is always the process of an existent that can influence motivation and behavior at any point in time. Changes in goals and self-efficacy lead to changes in performance because, at each point in the change process, the self-efficacy and goal entity operates at a new level affecting subsequent motivation and performances. In the flow of events, one can assess the state of self-efficacy and its relation to performance at any point in the process.

The same state-based self-regulation applies as well to the self-motivating potential of goals. One does not have to go through a series of prior goal changes for a goal to be self-motivating at a particular time. For example, every few years, universities adopt a financial goal to enlarge their endowment coffers. Having adopted the goal, they mount and maintain a vigorous fund-raising campaign directed at potential donors. Their self-motivation does not depend on their having undergone a series of prior financial goal changes. The campaign goal remains fixed as a robust motivator throughout the fund-raising campaign until the goal is met.

Bledow (2013) acknowledges the influence of goals on performance but then criticizes goal theory for focusing solely on a "fixed" entity to the neglect of the "dynamic unconscious processes" that allegedly govern the operation of conscious goals. The Locke and Latham (1990, 2013) goal work, which spans many decades, is soundly grounded in theory and a vast body of empirical evidence. It is uniquely broad in scope and stringent in analyses. Additionally, it provides a coherent framework for social applications. In a major share of their experimentation and applications, the adopted goals are a conscious entity that

functions as one of the most reliable motivators. This is a stellar record for an allegedly inert static entity. Goals can even operate long-term. Conscious adoption of a career goal predicted occupational advancement 25 years later (Howard, 2013)! Valued distal goals, such as choice to go to college, structure life courses. Intermediate goals, such as choice of major, shape the path to a lifetime career.

One of the most powerful effects of self-efficacy beliefs is their influence on the choices people make. By affecting choice behavior at crucial decision points, self-efficacy can profoundly affect the courses people's lives take. Among the choices that affect life paths, those that center on career choice are of special importance. This is because occupations structure a large part of people's everyday reality and serve as a major source of personal identity and a sense of well-being.

Children's occupational considerations are already crystalized early in life. The patterning of children's perceived self-efficacy influences the types of occupational activities they believe they can do which, in turn, is linked to the kinds of jobs they would choose for their life's work (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001). In the case of adults, self-efficacy influences the occupations people choose, how well they prepare themselves for their chosen pursuits, and the level of success they achieve in their pursuits (Bandura, 1997; Lent, Brown, & Hackett, 1994).

Bledow (2013) portrays self-regulation of motivation as operating unconsciously through oscillation between perceived demands and self-efficacy. However, these oscillating factors are conscious. Bledow argues that, as epiphenomenal, they "can surface to conscious reflection" but they merely reflect a broad set of unspecified unconscious processes (16). As long as these unconscious processes remain unspecified and unmeasured, the oscillating model remains unverifiable. However, there is one aspect of the model that is testable.

Bledow (2013) contends that demand perception influences self-efficacy. In fact, the evidence supports the opposite causal direction, that is, self-efficacy influences demand perception. In assessing self-efficacy, individuals judge their capabilities in terms of the levels of challenges they believe they can surmount. Individuals of high self-efficacy perceive the same set of challenges as less demanding than those plagued by self-doubts about their capabilities. Thus, for example, the same academic grade of B will be perceived as a high demand by students who believe they cannot do better than a C grade but as low demand by students who are supremely confident that they can achieve an A grade. In research on occupational burnout, the conceptual model in which self-efficacy influences perceived job demands provides a better fit to the empirical data than one that assumes that perceived job demands determine self-efficacy (Consiglio, Borgogni, Alessandri, & Schaufeli, 2013).

Stripping Personality of Intrapersonal Determinants, Context, and Conditionality

Dispositional trait theory, in which the Big Five is the flagship, shrinks personality to five groups of habitual behaviors. It characterizes individuals mainly in terms of behavioral types assessed with items stripped of context and conditionality. I have applauded Brent Roberts' efforts to contextualize personality theory. I was, therefore, surprised by the commentary submitted by Jackson, Hill, and Roberts (2012). It is essentially a defense of traditional trait theory in the decontextualized form. The authors contend that I was unfair to trait theory by

characterizing it as primarily clusters of decontextualized behaviors. In fact, Jackson et al. argue, traits are “neurophysiological structures” that “cause automatic patterns of thought, feeling, and behaviors” (746). In this characterization, conscious self-reports of habitual behaviors are reduced to a neurophysiological causal force through an alleged process of emergence. In seeming contradiction, the authors further claim that traits operate discriminatively in a transituational way.

Let us compare these attributed causal properties to the actual operationalization of traits and how they are used and interpreted. I select, for this illustrative purpose, the trait of conscientiousness because it is usually the best predictor and oftentimes the only one in the five-fold taxonomy that is significant. The trait of conscientiousness is operationalized by a set of behavioral descriptors. Here are some of the items: “I try to perform all the tasks assigned to me conscientiously,” “I am a productive person who always gets the job done,” “I strive for excellence in everything I do,” and “I work hard to accomplish my goals.”

Contrary to the claim by Jackson et al. (2012), the items in this trait include neither thoughts nor feelings. The items are simply a cluster of dispassionate conscientious behaviors. Unless one is a mind-body dualist, every activity has a biological correlate. In their biological reduction of conscious self-reports, a neurophysiological correlate is reified as a causal force that automatically triggers thoughts, affects, and behaviors. However, the authors do not explain how “neurophysiological structures” emerge and get endowed with generalized causal power. Their biological reductionism does not meet the conditions for reductibility (Nagel, 1961).

Jackson et al. (2012) ignore the issue of context at the neurophysiological level in their reductive decontextualized traitism. Context determines whether neurophysiological structures are activated or not. For example, in two studies (Prince, 1984) on the effect of context on the power of modeling, students increased belief in their mathematical self-efficacy when told that the person modeling mathematical skills had little prior experience in mathematics like them, but they did not change their self-efficacy when the model was portrayed as well versed in mathematics. Spider phobics increased belief in their coping self-efficacy and subsequent coping behavior when told that the person modeling the coping skills had been fearful of insects, but they gained no benefit in enhanced self-efficacy and coping behavior when told that the model feeds tarantulas in a pet shop. In studies of frame of reference cited later, the Big Five lacks predictiveness in the decontextualized form but gains some predictiveness when participants complete the questionnaire with the relevant context in mind. The power of context remains a vexing problem for neuroscience and continues to elude adequate explanation.

Misconstrual of Emergence

Jackson et al. (2012) characterize traits as “emergent qualities” produced by a mix of behaviors, thoughts, and feelings that vary “across specific situations” (747). Continuing with the conscientiousness trait, there is nothing emergent about it. It is simply a collection of self-regulation behaviors clustered by a computer. In emergence, constituent elements are transformed into qualitatively new phenomena that are not predicable from the elements. Human functioning can be analyzed at different levels of complexity. They include physical, chemical, biological, psychological, and social structural. Each level of functional complexity

involves emergent new properties that are distinct to that level. In this transformative process, the simpler constituent elements produce qualitatively new phenomena through their interactive effects. The new phenomena at each level of functional complexity must be explained by laws in their own right. For example, at the social structural level, group performance cannot be predicted solely from factors operating at the individual psychological level because it lacks the social interactive dynamics that make the whole different from the sum of the parts.

The Jackson et al. (2012) conception of emergence is at odds with the doctrine of emergence. In their view, traits simply emerge in some unexplained way from a mix of behavior, thoughts, and feelings. This is multicausation, not emergence of a new phenomenon governed by its own set of laws. Nor do the authors explain why behavior is included among the constituents of the emergence of behavior. How do feelings figure in the emergent transformation? It is hard to find any evidence of affect in conscientiousness. If behavior produced by multiple factors, which is almost always the case, is construed as emergent behavior, then virtually all behavior is emergent. The doctrine of emergence loses its meaning.

On Disputing Decontextualization

Jackson et al. (2012) contend that I misrepresent trait assessment as decontextualized. No amount of linguistic cloaking of behavioral traits in the language of neurophysiological structures and emergent phenomena alter the fact that the same set of items within each trait are administered regardless of the activity domain, the context of the activity, and the conditions under which the behavior is performed. The types of traits selected may vary across activities, but the items within a trait, stripped of context, are fixed regardless of the predicted activity of interest. Item fixedness defines one-size-fits-all assessment.

Researchers in the organizational field are to be commended for demonstrating that decontextualization compromises predictiveness. Studies of frame of reference compare the predictiveness of the Big Five traits in the standard decontextualized form and when a work-specific context is added. The Big Five, devoid of context, are nonpredictive or weak predictors, whereas ratings with work-specific context in mind increase the predictiveness of some of the traits (Bing, Whanger, Davison, & VanHook, 2004; Schmit, Ryan, Stierwalt, & Powell, 1995). Field studies further document the predictive benefits of knowing the performance context (Hunthausen, Truxillo, Bauer, & Hammer, 2003).

Intractable Misrepresentation of Self-Efficacy Assessment

Trait theorists go to great lengths to caricature self-efficacy assessment as confined to "narrow" measures. Jackson et al. repeat this erroneous view in the claim that "Bandura argues for using narrow, highly contextualized measures of self-efficacy" (2012: 748). Context does not mean narrowness. There is nothing narrow, for example, about having employees judge their efficacy in the workplace domain. I argue for domain relatedness, not task specificity. Domains do not come in one size. Some are small; others are large. Nor does conditionality mean narrowness. In self-efficacy assessment, individuals judge their efficacy across a full range of challenges rather than for just a specific one. Self-efficacy theory addresses the breadth issue multidimensionally by measuring different forms of self-efficacy, their interrelationship, and how they work in concert in governing quality of functioning in specified activity domains.

Jackson et al. further contend that self-efficacy assessment “does not point out which contexts or situations are the most important” (2012: 748). This contradictory claim that self-efficacy theory focuses on context but does not specify it cannot be further from the truth. Self-efficacy assessment specifies types of competencies required, the level of challenges presented, and the contexts in which the behavior will be performed (Bandura, 2006).

Jackson et al. (2012) acknowledge that specific self-efficacy is a better predictor of performance than general self-efficacy. Even within the trait conceptual framework, narrow traits are better predictors than global traits (Dudley, Orvis, Lebiecki, & Cortina, 2006). Jackson et al. attribute the predictive superiority to specificity matching of self-efficacy to outcomes. In fact, in countless studies, outcomes differ from the type of self-efficacy that produces them (Bandura, 1997). In the health field, self-efficacy to regulate food purchases, exercise, and eating habits predicts weight loss. Perceived controllability is the key factor in biological stress effects. In extending self-efficacy theory and research to the biological aspects of health, self-efficacy in coping with stressors predicts change in autonomic, cardiovascular, neurotransmitter, and immune systems. In the academic domain, students’ beliefs in their efficacy to regulate their learning activities predicts their academic achievement on national standardized tests and likelihood of school dropout. In studies of self-efficacy to regulate one’s own consciousness, the predictor is perceived self-efficacy to control unwanted intrusive thoughts, whereas the criterion is task performance. These are studies in which there is no specificity matching between self-efficacy beliefs and performance outcomes.

Jackson et al. (2012) also make the erroneous claim that “narrow” self-efficacy measures do not provide explanations of processes. Self-efficacy theory specifies the process by which self-efficacy judgments are formed on the basis of enactive, modeling, persuasion, and affective sources of influence. The efficacy-relevant information conveyed by these different modes of influence must be integrated. The theory addresses whether the information is integrated through additive, multiplicative, configural, or heuristic processes. Judgment of self-efficacy is not confounded with the process through which it works. The latter process-oriented aspect of the theory focuses on how self-efficacy works through cognitive, motivational, affective, or decisional processes. It is amusing to see trait theorists, who have little to say about psychosocial processes, faulting self-efficacy theory for ignoring processes. Bledow (2013) similarly strips self-efficacy of its operative processes and then claims that it is a “static” entity. In this mistaken view, self-efficacy beliefs are misrepresented as thoughts devoid of any processes.

Jackson et al. (2012) further contend that “narrow” self-efficacy measures do not necessarily provide better explanation of the phenomenon being predicted. They cite the findings of a study by Trautwein, Lüdtke, Roberts, Schnyder, and Niggli (2009) that includes a variable called “competency beliefs.” It is measured by several traitlike items, many of which actually measure incompetent habitual behaviors, not self-belief, for example, “I often feel completely lost when doing my math homework.” Other items are simply statements of successful performance. This study is irrelevant to self-efficacy theory because this confounded variable does not measure the construct. Because a good share of the items are self-reports of performance rather than self-beliefs, it does not even measure the authors’ construct of “competency beliefs.”

Conceptual Elusiveness of Disposition

Traits are usually construed as dispositions. Once a factor is christened as a dispositional trait, it is automatically invested with generalized predictive and regulatory power. Dispositional traits are alleged to predict and influence behavior across time, situations, activities, and environmental circumstances. Moreover, they are granted priority in causal structures. In this causally privileged status, they may need to enlist some mediators to affect performance, but they are proclaimed as the superordinate driving force.

Because of its conceptual vagueness, the disposition construct has an Alice in Wonderland quality to it. As Humpty Dumpty explains, “When I use a word, it means just what I choose it to mean—neither more nor less” (Carroll, 1871/1999: 57). It is easy to create a dispositional trait. Just put together a collection of redundant decontextualized items and you have a disposition. Using this method, Chen et al. (2001) turned allegedly narrow self-efficacy into a superordinate disposition. This transformative feat is accomplished linguistically with a mere eight stripped-down items that essentially say, in slightly different ways, I am efficacious in most things.

The arbitrariness of what gets construed as a disposition is revealed in research using Dweck’s (1999) construct of conception of ability as inborn or acquirable. This notion has been construed as a personality disposition. Dweck (personal communication, 2011) rejects this misconstrual. She characterizes it as a belief that is readily teachable and modifiable, not a dispositional trait. Moreover, one and the same individual might construe adroitness as inborn in one domain but acquirable in another.

Utility of Trait Measures

Jackson et al. (2012) claim that I regard the Big Five as “useless.” I never made such a rash claim. The Big Five trait taxonomy assesses how one typically behaves in terms of five categories of behavior. A self-report of habitual behavior, if veridical, should have some predictive value as long as the daily life conditions remain much the same. As previously noted, however, decontextualization sacrifices predictiveness. Continuing with the trait of conscientiousness, among the items under the umbrella trait label, several of them measure whether individuals set goals for themselves and stick to them: “I work hard to accomplish my goals” and “I have a clear set of goals and work toward them in an orderly fashion.” Given the reliable predictiveness of goal setting (Locke & Latham, 1990, 2013), these two items alone should yield some relation to performance. In addition to goals, the other bedfellows in the conscientiousness trait include a few items measuring fastidiousness, dutifulness, planfulness, and self-discipline. The extent to which these various behaviors in the conceptual mix contribute to the correlates remains unknown. I would bet on self-regulation through goal setting and self-discipline but not on dutifulness and fastidiousness, which are likely to hinder creativity and productivity. In short, I am not questioning the predictiveness of relevant habitual behaviors. Rather, I take issue with elevating habitual behavior to a superordinate disposition, arbitrarily investing it with generalized causative properties, and often assigned causal primacy in tests of causal structures.

An inventory of habitual behaviors is not a theory of personality. If an inventory comes to define the field of personality, it gets marginalized as a source for a handy all-purpose measure. It gets appended, often with little conceptual rationale, to whatever one is studying

under the impression that inserting an all-purpose inventory in the causal mix provides the contribution of “personality” to human functioning.

Jackson et al. (2012) propose a matrimonial union in which behavioral traits influence behavior through self-efficacy. The posited links are testable statistically. However, interpreting the meaning of the findings is another matter. Self-efficacy influences both the acquisition and regulation of behavior. In tests of direction of causation, self-efficacy retains its predictiveness of performance when Big Five traits are controlled, whereas the traits lose much, if not all, of their predictiveness when self-efficacy is controlled (Caprara, Barbaranelli, Pastorelli, & Cervone, 2004).

In 1931, Robert Bernreuter created the first widely used personality inventory as his doctoral dissertation at Stanford University. It contained the following six traits: neuroticism, introversion-extraversion, sociability, dominance-submission, self-sufficiency, and self-confidence (Bernreuter, 1931). The Big Five bears a striking resemblance in factor structure to the personality inventory developed by Bernreuter 80 years ago. These two personality inventories should be compared to determine whether the Big Five is any more predictive than the Bernreuter of 80 years ago! With a trait of self-confidence, the Bernreuter inventory may even do better.

Concluding Remarks

There is an entrenched mind-set in the field of personality that if one does not embrace the Big Five, one is an antipersonality heretic. Quite the contrary. Social cognitive theory provides an integrated theory of personality that addresses the complexity of human self-development, adaption, and change from an agentic perspective (Bandura, 1999). Walter Mischel, who valiantly fought the trait war for decades, also provides a theory of personality that integrates intrapersonal determinants with conditionally manifested dispositions (Mischel & Shoda, 1999).

Human behavior is socially situated, intricately contextualized, and conditionally manifested. Self-efficacy theory addresses these contextual and conditional features of human functioning. Paradoxically, decontextualized trait theory of personality is the only specialty in the field of psychology that violates what is known about the contextual embeddedness and conditionality of human behavior.

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