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COMMENTS ON THE CRUSADE AGAINST THE CAUSAL EFFICACY OF HUMAN THOUGHT

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Summary — Hawkins reiterates the familiar behavioristic doctrine that psychology should banish factors that cannot be directly observed. He seems to be unaware that the very operant theory he is espousing is heavily invested in internal determinants that do not lend themselves to direct observation. Because behavior is often unaffected by its immediate situational antecedents and consequences, operant analysts are turning increasingly to internalized determinants of behavior, such as the residues of past reinforcements. These internalized determinants are not directly observable or measurable. They are inferred organismic states. Hawkins invokes the standard behavioristic arguments that, like other cognitive events, beliefs of personal efficacy are epiphenomenal by-products of conditioned responses. The paradigms used to verify the causal contribution of efficacy beliefs to performance renders this claim empirically baseless. Efficacy beliefs are systematically raised to differential levels by means that involve no performances or by bogus feedback that is either unrelated to performance or is contrary to performance. In none of these paradigms are instated efficacy beliefs reflections of performance, but they are uniformly good predictors of subsequent performance. Epiphenomenal assertions are self-destruct arguments.

In self-efficacy theory, people's beliefs in their capabilities to manage environmental demands affect the courses of action they choose to pursue, how much effort they put forth in a given endeavor, how long they persevere in the face of obstacles and failure experiences, how much anxiety and depression they experience in coping with stressors and the level of accomplishments they realize. These relationships have been amply verified by converging evidence from divergent methodologies applied to diverse areas of functioning (Bandura, 1992a, b, in press; Lent, Brown & Hackett, 1994; Maddux & Stanley, 1986; Schunk, 1989; Schwarzer, 1992). In a forthcoming book (Bandura, in press), I review the vast programs of interdisciplinary research stimulated by self-efficacy theory in the fields of

educational development, clinical dysfunction, behavioral medicine and organizational functioning, to mention a few. The findings attest to the explanatory and predictive power of the theory and to its utility in guiding programs that contribute to human betterment.

Hawkins (1992) concedes that the empirical relationships between perceived self-efficacy and different aspects of functioning are well established. However, arguing from the view that thought has no effect on human motivation or action, he regards perceived self-efficacy variously as a "hypothetical construct," and "metaphorical," and as an "epi-phenomenon of performance." Hawkins provides no empirical evidence in support of his position. Rather, he invokes post-hoc explanations that, we shall see

shortly, have in fact been tested and disconfirmed. He also rests his case on disputable arguments of others, some of whom (Corcoran, 1991) make claims that have been refuted empirically (Bandura, 1991). Critiques of the commentaries Hawkins draws upon have been presented elsewhere and will not be reviewed here (Bandura, 1984, 1986b, 1991).

Hawkins reminds readers of the sin of mentalism and the virtues of Skinnerian functionalism in which human behavior is shaped and controlled by contiguous external stimuli. The model of contingency control has not fared well, although one would not know it from Hawkins' portrayal. Estes (1971) summarized the evidence succinctly when he reported that "*the frequency with which animals and men in nonlaboratory situations repeat punished acts and fail to repeat rewarded ones is so great that, as a statistical generalization, the empirical law of effect is all but vacuous.*" In espousing the contingency model of causation, I believe Hawkins ignored the large body of evidence that people's beliefs about what leads to what largely determine whether paired experiences and response consequences have any effect on human behavior (Bandura, 1986a; Brewer, 1974; Dawson & Biferno, 1973; Dulaney, 1968; Estes, 1972; Farber, 1963; Speilberger & DeNike, 1966).

Even behavior analysts are beginning to discard the basic three-element model ($S^d \rightarrow R \rightarrow S^r$), which maintained that behavior is shaped and controlled by contingent stimuli. In the words of Lacey and Rachlin (1978), "*The idea that factors which cause an event are immediately antecedent or temporally contiguous to it dies hard.*" With mounting evidence that behavior is often unaffected by its immediate antecedents and consequences, proponents of the contingency model of causation increasingly place the explanatory burden on a conjectured internal surrogate, namely, the residue of the "history of reinforcement." Now that behavior analysts are including internal surrogates in their explanatory schemes, the theoretical issue has come down to whose internal determinants have greater explanatory and predictive power.

The present commentary will first address the issue of the causal contribution of perceived self-efficacy to human motivation and action. I am using the term causation in this context as functional dependence between perceived self-efficacy and other events. This issue has been extensively investigated by a variety of experimental strategies in which perceived self-efficacy is systematically varied, whereupon its effects on subsequent performance are measured. Behavior analysts typically single out studies in which perceived self-efficacy is altered by enactive modes of influence because there is a behavior to latch onto. They then claim that perceived self-efficacy is a reflection of prior performance. This claim has long lost its credibility by evidence from countless studies demonstrating that perceived self-efficacy contributes independently to subsequent performance when variations in prior performance are controlled. I shall return to this matter later. In addressing the issue of causality I will first present evidence from experimental paradigms in which perceived self-efficacy is altered by nonperformance means. Such modes of influence provide no relevant performance information for judging one's personal capabilities.

One approach to the test of causality through nonperformance means is to introduce a trivial factor devoid of information to affect competency, but that can alter perceived self-efficacy. Studies of anchoring influences show that arbitrary reference points from which judgments are made bias judgmental processes because the adjustments from the arbitrary starting points are usually insufficient (Tversky & Kahneman, 1974). For example, in judging the size of the crowd in a stadium, people will judge a smaller crowd from an arbitrary starting point of 1000 than from a starting point of 20,000. Cervone and Peake (1986) biased self-efficiency judgment either in a positive or negative direction by varying the level of arbitrary starting numbers. The higher the instated perceived self-efficacy the longer individuals persevered on difficult and unsolvable problems before they quit.

The same environmental influences rarely, if

ever, produce uniform effects in different individuals. Theories that place the cause of behavior in environment stimuli cannot account for variation in performance accompanying the same external input. Hawkins regards influences that operate through a nonperformance modality as verbal persuasion that supposedly explain behavior without needing to consider their impact on people's beliefs in their personal capabilities. This is a nonexplanatory "explanation" of performance that rests on the illusion of uniformity of effects. In a mediational analysis, Cervone and Peake demonstrate that anchoring influences have no effect on performance unless they alter perceived self-efficacy. When variations in perceived self-efficacy are partialled out, the external anchoring influence has no independent predictive power. These findings are replicated when perceived self-efficacy is biased simply by having people judge their efficacy on scales of ascending or descending levels of possible attainments. Self-judged efficacy is lower for ascending than for descending scale formats. This environmental input is simply a physical arrangement of scale items that neither provides any differential information concerning capabilities nor involves any social influences. As in the anchoring input, scale formats are related to performance only to the extent that they affect perceived self-efficacy.

People partly judge their efficacy through social comparison. Litt (1988) varied perceived self-efficacy by bogus normative comparison. After being tested for pain tolerance on a cold-pressor test, individuals were led to believe that they were either at a high (90th) or low (37th) percentile rank in pain tolerance compared to an ostensibly normative group, regardless of their actual performance. The bogus normative information produced differential levels of perceived self-efficacy which, in turn, were accompanied by corresponding changes in pain tolerance. The greater the changes in perceived self-efficacy, the larger the changes in pain tolerance.

In the second phase of the experiment, the bogus normative feedback was the opposite to that

provided originally, presumably reflecting enduring capability to bear pain. Individuals who were led to believe that they had lost their comparative superiority lowered their perceived self-efficacy, whereas those led to believe they had allegedly gained comparative superiority raised their belief in their capability to tolerate pain. Their subsequent level of pain tolerance changed in the direction of their efficacy beliefs. The condition involving alleged change from high to low normative standing is especially interesting because perceived self-efficacy overrode past performance as a predictor of subsequent performance. If perceived self-efficacy is an epiphenomenon of prior performance it should have remained high. The regulatory role of perceived self-efficacy instated by fictitious normative comparison has been replicated in markedly different domains of functioning (Bouffard-Bouchard, 1990; Jacobs, Prentice-Dunn & Rogers, 1984).

Another nonperformance paradigm for verifying the causal contributions of perceived self-efficacy to human functioning relies on the vicarious mode of efficacy induction (Bandura, Reese & Adams, 1982). Phobics observe coping strategies being modeled until their perceived self-efficacy is raised to different preselected levels but they themselves perform no actions. Higher levels of perceived self-efficacy are accompanied by higher performance attainments. Microanalysis of efficacy-action congruences reveals a close fit between perceived self-efficacy and performance on individual tasks. This is equally true for individuals who were so phobic that they could not perform a single response in the pretest assessment and hence, had no pretreatment performance information from which to foretell what they could do after observing the models. The only thing their pretest behavior could tell them is that they could do nothing.

Hawkins attributes changes in performance to extinction of anxiety. This post-hoc explanation not only invokes the type of inner cause repudiated by the operant conditioning theory he is espousing, but also manages to disregard completely the vast body of evidence

demonstrating that anxiety arousal does not control avoidance behavior. Behavior analysts reject anxiety as a cause of behavior. They regard anxiety as a name for behavioral effects, not an explanation of behavior (Catania, 1979). It is the height of irony to see Hawkins exorcising inner causes in the name of Skinnerian functionalism while simultaneously invoking alternative inner causes that would astound behavior analysts. In another context in his article, Hawkins accepts "willingness" as another alternative inner cause of behavior. The effort to score points against self-efficacy theory apparently takes precedence over conceptual coherence. Having gotten himself into a self-negating predicament, Hawkins is now faced with the choice of either disavowing the theory he is espousing or disavowing anxiety as a cause of behavior.

The notion that anxiety regulates avoidance behavior has been extensively tested and repeatedly disconfirmed (Black, 1965; Bolles, 1975; Herrnstein, 1969; Rescorla & Solomon, 1967; Schwartz, 1978). Moreover, assessments conducted during the course of treatment of phobic behavior reveals no consistent relations between changes in anxiety arousal and phobic behavior. Elimination of phobic behavior can be preceded by increases, reductions, or no change in anxiety arousal (Barlow, Leitenberg, Agras & Wincze, 1969; Leitenberg, Agras, Butz & Wincze, 1971). Neither the pattern nor magnitude of change in anxiety arousal accompanying treatment correlates significantly with changes in avoidance behavior (O'Brien & Borkovec, 1977; Orenstein & Carr, 1975; Schroeder & Rich, 1976).

The nonpredictiveness applies equally to expected anxiety. Williams (1992) has analyzed by partial correlation numerous data sets from studies in which perceived self-efficacy, expected anxiety, and phobic behavior were all measured. As shown in Table 1, perceived self-efficacy accounts for a substantial amount of variance in phobic behavior when anticipated anxiety is partialled out, whereas the relationship between anticipated anxiety and phobic behavior essentially disappears when perceived self-efficacy is partialled out. The predictive superiority

Table 1

Comparison of the Relation Between Perceived Self-Efficacy and Coping Behavior when Anticipated Anxiety is Controlled, and the Relation Between Anticipated Anxiety and Coping Behavior when Perceived Self-Efficacy is Controlled

	Coping behavior	
	Anticipated anxiety with self-efficacy controlled	Perceived self-efficacy with anticipated anxiety controlled
Williams and Rappoport (1983)		
Pretreatment 1*	-.12	.40†
Pretreatment 2	-.28	.59‡
Posttreatment	.13	.45†
Follow-up	.06	.45†
Williams et al. (1984)		
Pretreatment	-.36†	.22
Posttreatment	-.21	.59§
Williams et al. (1985)		
Pretreatment	-.35†	.28†
Posttreatment	.05	.72§
Follow-up	-.12	.66§
Telch et al. (1985)		
Pretreatment	-.56§	-.28
Posttreatment	.15	.48‡
Follow-up	-.05	.42†
Kirsch et al. (1983)		
Pretreatment	-.34†	.54§
Posttreatment	-.48‡	.48‡
Arnou et al. (1985)		
Pretreatment	.17	.77§
Posttreatment	-.08	.43†
Follow-up	-.06	.88‡
Williams et al. (1989)		
Midtreatment	-.15	.65§
Posttreatment	.02	.47‡
Follow-up	-.03	.71§

*The pretreatment phases of some of these experiments include only subjects selected for severe phobic behavior. They have a uniformly low sense of coping efficacy. In such instances, the highly restricted range of self-efficacy scores tends to lower the correlation coefficients in pretreatment phases.

† $p < .05$. ‡ $p < .01$. § $p < .001$.

of perceived self-efficacy is replicated in other domains of functioning. People's beliefs in their capabilities predict their performance attainments, whereas their level of anxiety bears little or no relationship to their performances on stressful academic tasks (Meece, Wigfield & Eccles, 1990; Pajares & Miller, 1994) and athletic activities (McAuley, 1985). Beliefs of personal efficacy

similarly predict willingness to perform threatening activities, but anticipatory anxiety makes no independent contribution (Arch, 1992a).

Adopting the widely used argument by behavior analysts against cognitive determinants, Hawkins alleges the perceived self-efficacy is inferred from the behavior it seeks to explain. However, this handy argument happens to be inappropriate to causal tests of self-efficacy theory because self-percepts of efficacy are conceptually and operationally distinct from the behaviors to be explained. Indeed, in most of these experiments there is no relevant or informative behavior from which to infer personal efficacy.

A theory that denies that thoughts can affect motivation and action does not lend itself readily to the explanation of complex human behavior. Although cognitive determinants are disavowed by behavior analysts, the causal contributions of such determinants cannot be excised all that easily. Therefore, adherents of radical environmentalism translate cognitive determinants into convoluted behavioristic terms, move the determinants outside the organism, and then ascribe their effects to the direct action of the externally relocated events. I have described elsewhere the forms these relabeling and external relocation exercises take (Bandura, 1986a). Self-efficacy is a broadly integrative determinant, that predicts human functioning, regardless of whether it involves behavioral attainments, self-regulation of motivation, learning activities or refractory habits, coping with threatening or taxing situational demands, stress, depression, pain tolerance, autonomic activation, catecholamine secretion, changes in the immune system, career choice and development, collective organizational functioning and political activism, just to mention a few (Bandura, 1992a, b). Whatever post hoc explanations Hawkins might invoke, they will surely be less parsimonious than perceived self-efficacy, which successfully predicts not only the behavioral changes accompanying different environmental inputs, but variations in behavior between individuals receiving the same environmental input, and even variations within the same individual in the tasks performed

successfully and those shunned or attempted but failed.

Another strategy for verifying the causal contribution of perceived self-efficacy to human functioning is to test the multivariate relations between relevant determinants and performance in the theoretical causal model by hierarchical regression analysis or causal modeling techniques. These analytic tools for theory testing indicate how much of the variation in performance is explained by perceived self-efficacy when the influence of a host of other determinants is simultaneously controlled.

Many of the multivariate investigations involve panel designs in which perceived self-efficacy and performance attainments are measured on two or more occasions to determine how the factors affect each other. In some of these studies, perceived self-efficacy is altered by naturally occurring influences during the intervening period. More often, perceived self-efficacy is altered experimentally by appropriate influences. The temporal ordering and systematic variation of perceived self-efficacy antecedently to the predicted behavior helps to remove ambiguities about the source and direction of causality. In addition to controlled induction and temporal priority of changes in perceived self-efficacy, controls are applied for other potentially influential factors. The results of such studies reveal that perceived self-efficacy contributes significantly to variations in motivation and performance attainments (Bandura & Jourden, 1991; Dziewaltowski, 1989; Locke, Frederick, Lee & Bobko, 1984; Ozer & Bandura, 1990; Wood & Bandura, 1989; Zimmerman, Bandura & Martinez-Pons, 1992). The causal contribution of perceived self-efficacy is further documented in comparative tests of the predictive power of social cognitive theory and alternative conceptual models (Dziewaltowski, Noble & Shaw, 1990; Lent, Brown & Larkin, 1987; McCaul, O'Neill & Glasgow, 1988; Siegel, Galassi & Ware, 1985).

The diverse causal tests, of which only a small sample could be presented here, have been conducted with different modes of efficacy induction, varied populations, all sorts of domains

of functioning and response systems, with intergroup and intraindividual experimental designs, and analyzed by microlevel and macrolevel relations. Moreover, perceived self-efficacy is measured by different formats and domain-linked scales so that the results are not peculiar to a particular instrument. The evidence is consistent in showing that perceived self-efficacy contributes significantly to level of motivation and performance attainments. Evidence that divergent procedures produce convergent results across heterogeneous domains of functioning adds to the explanatory and predictive generality of the efficacy determinant.

Hawkins appears to misunderstand the real distinction between the information conveyed by a given mode of influence and the analysis of that information in the formation of self-efficacy judgments. In addressing this distinction I have explained that performance information is simply raw data that is not inherently enlightening. Rather, it becomes instructive only through cognitive processing. This is because a host of nonability factors affect performance. Self-appraisal of efficacy is, therefore, a judgmental process in which the relative contribution of different factors operating at the time must be considered and weighted. The degree to which people alter their perceived self-efficacy on the basis of performance experiences will depend upon such factors as the perceived difficulty of the task, the amount of effort they had to expend, their physical and psychological condition at the time, the amount of external aid they received, the situational circumstances under which they performed, the quality of the apparatus, the temporal pattern of their successes and failures, and the adequacy with which they monitor and recall their experiences. In short, efficacy beliefs are not simply implants of past actions. In fine-grain analyses of performance attainments and shifts in perceived self-efficacy at each step in the process of change, perceived self-efficacy often exceeds, only occasionally matches, and sometimes remains below past performance attainments, depending on how people read their experiences (Bandura, 1982).

In a line of reasoning at odds with logic, Hawkins contends that I adopted the view that performance information is cognitively processed in judging personal efficacy in anticipation of the criticism that people's beliefs in their capabilities are "superfluous" to how they behave. In quoting a brief sentence in which I distinguish between the conveyance and the processing of performance information, Hawkins strangely deletes an important qualifier in that sentence.

Following the altered quotation, Hawkins goes on to tell us that not only is perceived self-efficacy unnecessary for learning but "a veritable plethora of operant conditioning experiments" has shown that you do not even need consciousness. These assertions would suggest that evolutionary forces really went astray in encumbering people with the capacity for thought and consciousness, neither of which has any functional value. However, the problem resides in Hawkins' assertions, which fail to fit the facts, rather than in the nonutility of thought. He seems to be completely unaware that a "plethora" of studies reveal that learning does not occur without awareness of what is being reinforced (Bandura, 1986a; Brewer, 1974; Dulaney, 1968; Gholson, 1980; Karpf & Levine, 1971; Phillips & Levine, 1975; Spielberger & DeNike, 1966). People also learn little, if anything, from repeated paired experiences, unless they recognize that the events are correlated (Dawson & Biferno, 1973; Dawson & Furedy, 1976; Dawson & Reardon, 1973).

It is fortunate that outcomes do not automatically strengthen every response they follow. If behavior were reinforced by every immediate effect it produced, people would be overburdened with so many competing response tendencies that they could become immobilized. Limiting learning to events that are sufficiently telling to gain recognition has considerable adaptive value. Intelligent action often requires the disregard of immediate positive outcomes. Innovation requires prolonged perseverance in the face of repeated failure, setbacks and rejection. For lower organisms possessing limited symbolizing capacities, there are evolutionary advantages to being biologically preprogrammed

so that stimulus events will reliably activate species-specific behavior without requiring much, if any, symbolic processing of experience. However, extensive innate preprogramming, which makes it easy to shape behavior by noncognized experience, extracts a huge price by its behavioral fixedness. Outcomes can facilitate the stereotyped behavior characteristic of a species and bring it under the control of new stimuli, but, unlike the extraordinary serviceability of cognitively based learning, it is exceedingly difficult to get animals to behave in new ways. It comes as no surprise, as Bolles (1972) has pointed out, that most of the research on learning in animals is concerned with altering the rate of responses they naturally perform rather than building complex behaviors. The latter requires some capacity for symbolic coding and cognitive organization of experience.

Hawkins' assertion that perceived self-efficacy has no impact on learning similarly has no foundation in fact. Exposure of children to videotaped peers solving mathematical problems raises observers' beliefs in their learning capabilities (Schunk & Hanson, 1989). The higher the level to which their perceived learning efficacy is raised, the more they learn new material in subsequent self-directed instruction and the higher is their terminal performance attainments in mathematics. The strong predictiveness of perceived learning efficacy is consistently replicated in other experiments varying the characteristics of the videotaped models such as their sex, age, and whether they exhibit mastery or coping behavior (Schunk & Hanson, 1985; Schunk, Hanson & Cox, 1987). Perceived learning efficacy cannot be dismissed as a reflection of performance because children's sense of learning efficacy is enhanced simply by watching models without performing any mathematical activities during the influential exposure.

In another odd line of reasoning, Hawkins argues that perceived self-efficacy can be dismissed as a determinant of human motivation and action because "*it is not useful to suppose that a rat in a Skinner box improves during magazine training because of a blossoming sense of self-*

efficacy (p. 253)." Our poor rat is restrained in a tiny box stripped of everything except for a bar that can be depressed. Consider by contrast, the extensive applications of self-efficacy theory to human pursuits in complex unrestrained environments providing numerous options, such as career choice and development in college students (Betz & Hackett, 1986; Lent, Brown & Hackett, 1994). Perceived self-efficacy predicts the range of career options seriously considered and the perseverance and academic performance in the chosen fields of study when the influence of scholastic aptitude, vocational interests and level of prior academic achievement are controlled (Lent, Brown & Larkin, 1986). When Hawkins finds a group of rats who have succeeded in gaining entry to college, I shall be happy to verify that perceived self-efficacy is an influential contributor to career choice and development.

Behavior analysts have to demonstrate that their model of contingency control can account for complex human activities rather than keep pointing to modification of rate of trivial responses emitted by animals in barren controlled settings. People were led to believe that applications of operant principles to problematic behavior would verify that human behavior is fully predictable and controllable by contingent stimuli. However, evidence that the actual accomplishments of operant technology fall far short of claims in producing generalized and enduring behavioral changes (O'Leary & Wilson, 1987), only underscored that there is more to the determinants of human behavior than contingencies of reinforcement.

Contrary to Hawkins' declaration, thoughts about personal efficacy are not a "hypothetical construct." Hawkins may fervently believe that his thoughts have no functional value, but surely he would not deny that his thoughts are quite real phenomenally. Although cognitive processes are not publically observable, they do have indicants through which they can become known indirectly. The indicants of thought are separate from the behavior to be explained. Verbal probes provide one indirect means of access. Orderly functional relationships are being established between

indirectly gauged thought and subsequent action (Bandura, 1986a; Ericsson & Simon, 1980).

By focusing on the verbal mode of the thought probe, rather than on what it reveals about content of thought that guides and motivates action, behavior analysts dub thought as merely verbal responses in an effort to divest it of any causal efficacy. When people report the cognitive activities they go through as they generate solutions and then execute them, it is not vocal sounds, but the content of the thought processes they reveal that predict how they behave. A major function of thought is to enable people to predict events and to develop ways to control those that affect their lives. Serious efforts to refine thought probes (Ericsson & Simon, 1980) contribute more to the understanding of human behavior than behavioristic relabelling schemes that discourage research into the nature, structure and function of thought.

Other sciences have made rapid strides in explaining and predicting events from the verifiable properties of postulated determinants that are not directly observable. For example, physicists have been remarkably successful in accounting for physical phenomena by testing the postulated properties of atoms, which are not given to direct public view. In commenting on the observability of factors in the natural sciences, Nagel (1961) put it well when he noted that, *"many laws employed in some of the most impressively comprehensive systems of the physical sciences are notoriously not about matters that would ordinarily be characterized as 'observable'."*

I was surprised to read that perceived self-efficacy is supposedly a "derivation" of Rotter's (1966) locus of control. Again, Hawkins (1992) conceptions and facts on this issue are not accurate. Perceived self-efficacy and locus of control not only represent different phenomena but are founded on entirely different conceptual schemes. Perceived self-efficacy is concerned with people's beliefs about their capabilities to produce certain performances; locus of control refers to people's beliefs about whether the outcomes they experience are dependent on their actions or are

the result of chance, fate, or luck. Research shows that locus of control and perceived self-efficacy bear little or no relation to each other. The correlations are, $r = .11$ (Smith, 1989), $r = -.01$ (Manning & Wright, 1983), and $r = -.22$ averaged across self-efficacy subscales (Taylor & Popma, 1990). With regard to the pattern of correlates, perceived self-efficacy predicts such diverse events as academic performance, proneness to anxiety, level of pain tolerance, career decision making, and political activism, whereas locus of control is a weak predictor or nonpredictor of these events (Grossman, Brink & Hauser, 1987; Manning & Wright, 1983; Smith, 1989; Taylor & Popma, 1990; Wollman & Stouder, 1991).

Rotter regards locus of control as a generalized trait. Self-efficacy theory rejects the trait approach to human behavior. Self-efficacy is conceptualized and assessed in terms of particularized judgments of capability that vary across realms of activity, different levels of task demands within a given activity domain, and under different situational circumstances. Perceived efficacy is not a contextless global disposition assessed by an omnibus test like the locus of control. Because of their theoretical incompatibility and concern with dissimilar phenomena, perceived self-efficacy cannot, by any stretch of the imagination, be a derivative of locus of control. If it were, it would lose most of its explanatory and predictive value.

Social cognitive theory identifies different classes of expected outcomes and measures them in discriminative ways linked to performances situated in contexts rather than in general decontextualized ways. Outcome expectations take three major forms (Bandura, 1986a). One class of expected outcomes includes the direct physical and social effects that performances produce. Human behavior is also regulated by observed outcomes experienced by others. Social cognitive theory rejects the crude functionalist view that behavior is regulated solely by external rewards and punishments. People adopt personal standards and regulate their behavior by their self-sanctions. They do things that give them self-satisfaction and a sense of self-pride and self-worth and refrain from behaving in ways that give rise to self-

satisfaction, self-devaluation and self-censure. Social cognitive theory adopts a functionalist view, but one that is more complex and befitting humans. Anticipated direct, vicarious and self-evaluative outcomes operate in concert to influence the course of human behavior. The triadic system of interacting anticipatory outcomes cannot be a derivation from locus of control because the outcome expectations are highly contextualized and two of them — vicarious outcomes and self-reactive outcomes — are nowhere to be found in locus of control.

Hawkins cites a pretend study by Kirsch in which students who said they feared snakes persuaded themselves they could handle a snake for make-believe payments of a million dollars, to save another's life or to spare one's own life. Many of them similarly persuaded themselves that they could marshal sufficient dexterity to toss a wad of paper into a wastepaper basket at some distance (46%) or at 50 feet (24%). Kirsch concluded from the higher persuadability for snake handling than paper tossing, that efficacy reflects "willingness" rather than skill. I have commented on the conception and methodology of this make-believe study elsewhere (Bandura, 1986b), and will not repeat my critique here, except to note that the findings of this pretend exercise have little to say of interest regarding perceived self-efficacy.

Social persuasion can raise perceived self-efficacy, especially in make-believe situations. The differential influence of the pretend inducements on snake handling and paper throwing are uninterpretable because the two activities are confounded with differential accuracy criteria. Tossing a wad of paper into a small remote target involves a stringent criterion of accuracy, whereas merely holding a snake does not. One could add a similarly stringent criterion to snake handling as, for example, being able to hold it without it moving at all and demonstrate that people could not persuade themselves that they could do it even for a million bucks.

Willingness essentially refers to intention. Belief that I can do something (*self-efficacy*) is theoretically, operationally, and empirically

distinct from whether I intend to do so (*intention*). Studies in which both factors are measured verify that perceived self-efficacy is a major determinant of intention and willingness to perform threatening activities (Arch, 1992a, b; deVries & Backbier, 1994; deVries, Dijkstra & Kuhlman, 1988; Dzewaltowski, Noble & Shaw, 1990; Kok, deVries, Mudde & Strecher, 1991; Schwarzer, 1992). Perceived self-efficacy influences performance both directly and through its effects on intention. The view that efficacy beliefs are intentions is conceptually incoherent and empirically refuted. As an avowed behaviorist, it is most surprising that Hawkins sees nothing problematic with a study relying entirely on make believe unlinked to any behavior and that he accepts uncritically an alleged inner factor, "willingness," as the regulator of behavior. Neither pretended behaviorless exercises, nor "willingness," which refers to the will of choosing, would be acceptable to behavior analysts. The overzealous effort to refute self-efficacy theory seems to blind Hawkins to his own contractions.

It is somewhat comic to observe an ardent proponent of the view that thoughts are by-products of conditioned responses arguing the rightness of his conceptions in an effort to sway the beliefs of others to his view. Hawkins does not seem to realize that, in so doing, he is propounding a self-negating argument. If thoughts are merely functionless accessories of conditioned responses, and proponents regard their own thoughts as such, they can hardly argue the truth value of their views. One can analyze how the conditioned responses that give rise to such a cognitive by-product were acquired. But it becomes pointless, from this perspective, to champion the rightness of the cognitive by-products of a behaviorist's conditioned responses over those of a cognitivist's conditioned responses. any more than one could argue that a conditioned pecking response is truer than a conditioned bar press. If Hawkins really believes that thoughts are simply accessories of conditioned responses devoid of any functional value, he should be describing his conditioning history that spawned the behavior of which his

views are accessories rather than proclaiming the rightness of Skinnerian functionalism.

References

- Arch, E. C. (1992a). Sex differences in the effect of self-efficacy on willingness to participate in a performance situation. *Psychological Reports*, *70*, 3–9.
- Arch, E. C. (1992b). Affective control efficacy as a factor in willingness to participate in a public performance situation. *Psychological Reports*, *71*, 1247–1250.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologists*, *37*, 122–137.
- Bandura, A. (1984). Recycling misconceptions of perceived self-efficacy. *Cognitive Therapy and Research*, *8*, 231–255.
- Bandura, A. (1986a). *Social foundations of thought and action: a social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1986b). The explanatory and predictive scope of self-efficacy theory. *Journal of Clinical and Social Psychology*, *4*, 359–373.
- Bandura, A. (1991). Human agency: the rhetoric and the reality. *American Psychologist*, *46*, 157–162.
- Bandura, A. (1992a). Exercise of personal agency through the self-efficacy mechanism. In R. Schwarzer (Ed.), *Self-efficacy: thought control of action* (pp. 3–38). Washington, D.C.: Hemisphere, 1992.
- Bandura, A. (1992b). Self-efficacy mechanism in psychobiologic functioning. In R. Schwarzer (Ed.), *Self-efficacy: thought control of action* (pp. 355–394). Washington, D.C.: Hemisphere, 1992.
- Bandura, A. (in press). *Self-efficacy: the exercise of control*. New York: Freeman.
- Bandura, A., & Jourden, F. J. (1991). Self-regulatory mechanisms governing the impact of social comparison on complex decision making. *Journal of Personality and Social Psychology*, *60*, 941–951.
- Bandura, A., Reese, L., & Adams, N. E. (1982). Microanalysis of action and fear arousal as a function of differential levels of perceived self-efficacy. *Journal of Personality and Social Psychology*, *43*, 5–21.
- Barlow, D. H., Leitenberg, H., Agras, W. S., & Wincze, J. P. (1969). The transfer gap in systematic desensitization: an analogue study. *Behavior Research and Therapy*, *7*, 191–196.
- Betz, N. E., & Hackett, G. (1986). Applications of self-efficacy theory to understanding career choice behavior. *Journal of Social and Clinical Psychology*, *4*, 279–289.
- Black, A. H. (1965). Cardiac conditioning in curarized dogs: the relationship between heart rate and skeletal behaviour. In W. F. Prokasy (Ed.), *Classical conditioning: a symposium* (pp. 20–47). New York: Appleton-Century-Crofts.
- Bolles, R. C. (1972). The avoidance learning problem. In G. Bower (Ed.), *The psychology of learning and motivation* (Vol. 6, pp. 97–145). New York: Academic Press.
- Bolles, R. C. (1975). *Learning theory*. New York: Holt, Rinehard, & Winston.
- Bouffard-Bouchard, T. (1990). Influence of self-efficacy on performance in a cognitive task. *Journal of Social Psychology*, *130*, 353–363.
- Brewer, W. F. (1974). There is no convincing evidence for operant or classical conditioning in adult humans. In W. B. Weimer & D. S. Palermo (Eds.), *Cognition and the symbolic processes* (pp. 1–42). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Catania, A. C. (1979). *Learning*. Englewood Cliffs, NJ: Prentice-Hall.
- Cervone, D., & Peake, P. K. (1986). Anchoring, efficacy, and action: the influence of judgmental heuristics on self-efficacy judgments and behavior. *Journal of Personality and Social Psychology*, *50*, 492–501.
- Corcoran, K. J. (1991). Efficacy, “skills,” reinforcement and choice behavior. *American Psychologist*, *46*, 155–157.
- Dawson, M. E., & Biferno, M. A. (1973). Concurrent measurement of awareness and electrodermal classical conditioning. *Journal of Experimental Psychology*, *101*, 55–62.
- Dawson, M. E., & Furedy, J. J. (1976). The role of awareness in human differential autonomic classical conditioning: the necessary-gate hypothesis. *Psychophysiology*, *13*, 50–53.
- Dawson, M. E., & Reardon, P. (1973). Construct validity of recall and recognition postconditioning measures of awareness. *Journal of Experimental Psychology*, *98*, 308–315.
- deVries, H., & Backbier, M. P. H. (1994). Self-efficacy as an important determinant of quitting among pregnant women who smoke: the Ø-pattern. *Preventive Medicine*, *23*, 167–174.
- deVries, H., Dijkstra, M., & Kuhlman, P. (1988). Self-efficacy: the third factor besides attitude and subjective norm as a predictor of behavioural intentions. *Health Education Research*, *3*, 273–282.
- Dulaney, D. E. (1968). Awareness, rules, and propositional control: a confrontation with S–R behavior theory. In T. R. Dixon, & D. L. Horton (Eds.), *Verbal behavior and general behavior theory* (pp. 340–387). Englewood Cliffs, NJ: Prentice-Hall.
- Dziewaltowski, D. A. (1989). Towards a model of exercise motivation. *Journal of Sport and Exercise Psychology*, *11*, 251–269.
- Dziewaltowski, D. A., Noble, J. M., & Shaw, J. M. (1990). Physical activity participation: social cognitive theory versus the theories of reasoned action and planned behavior. *Journal of Sport and Exercise Psychology*, *12*, 388–405.
- Ericsson, K. A., & Simon, H. A. (1980). Verbal reports as data. *Psychological Review*, *87*, 215–251.
- Estes, W. K. (1971). Reward in human learning: theoretical issues and strategic choice points. In R. Glaser (Ed.), *The nature of reinforcement* (pp. 16–36). New York: Academic Press.
- Estes, W. K. (1972). Reinforcement in human behavior. *American Scientists*, *60*, 723–729.
- Farber, I. E. (1963). The things people say to themselves. *American Psychologist*, *18*, 185–197.
- Gholson, B. (1980). *The cognitive-developmental basis of human learning: studies in hypothesis testing*. New York: Academic Press.
- Grossman, H. Y., Brink, S., & Hauser, S. T. (1987). Self-efficacy in adolescent girls and boys with insulin-dependent diabetes mellitus. *Diabetes Care*, *10*, 324–329.

- Hawkins, R. M. F. (1992). Self-efficacy: a predictor but not a cause of behavior. *Journal of Behavior Therapy and Experimental Psychiatry*, 23, 251–256.
- Herrnstein, R. J. (1969). Method and theory in the study of avoidance. *Psychological Review*, 76, 49–69.
- Jacobs, B., Prentice-Dunn, S., & Rogers, R. W. (1984). Understanding persistence: an interface of control theory and self-efficacy theory. *Basic and Applied Social Psychology*, 5, 333–347.
- Karpf, D., & Levine, M. (1971). Blank-trial probes and introjects in human discrimination learning. *Journal of Experimental Psychology*, 90, 51–55.
- Kok, G., deVries, H., Mudde, A. N., & Strecher, V. J. (1991). Planned health education and the role of self-efficacy: Dutch research. *Health Education Research*, 6, 231–238.
- Lacey, H. M., & Rachlin, H. (1978). Behavior, cognition and theories of choice. *Behaviorism*, 6, 117–202.
- Leitenberg, H., Agras, W. S., Butz, R., & Wincze, J. (1971). Relationship between heart rate and behavioral change during treatment of phobias. *Journal of Abnormal Psychology*, 78, 59–68.
- Lent, R. W., Brown, S. D., & Larkin, K. C. (1986). Self-efficacy in the prediction of academic performance and perceived career options. *Journal of Counseling Psychology*, 33, 265–269.
- Lent, R. W., Brown, S. D., & Larkin, K. C. (1987). Comparison of three theoretically derived variables in predicting career and academic behavior: self-efficacy, interest congruence, and consequence thinking. *Journal of Counseling Psychology*, 34, 293–298.
- Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior*, 45, 79–122.
- Litt, M. D. (1988). Self-efficacy and perceived control: cognitive mediators of pain tolerance. *Journal of Personality and Social Psychology*, 54, 149–160.
- Locke, E. A., Frederick, E., Lee, C., & Bobko, P. (1984). Effect of self-efficacy, goals, and task strategies on task performance. *Journal of Applied Psychology*, 69, 241–251.
- Maddux, J. E., & Stanley, M. A. (Eds.) (1986). Special issue on self-efficacy theory. *Journal of Social and Clinical Psychology*, 4, issue 3.
- Manning, M. M., & Wright, T. L. (1983). Self-efficacy expectancies, outcome expectancies, and the persistence of pain control in childbirth. *Journal of Personality and Social Psychology*, 45, 421–431.
- McAuley, E. (1985). Modeling and self-efficacy: a test of Bandura's model. *Journal of Sport Psychology*, 7, 283–295.
- McCaul, K. D., O'Neill, K., & Glasgow, R. E. (1988). Predicting the performance of dental hygiene behaviors: an examination of the Fishbein and Ajzen model and self-efficacy expectations. *Journal of Applied Social Psychology*, 18, 114–128.
- Meece, J. L., Wigfield, A., & Eccles, J. S. (1990). Predictors of math anxiety and its influence on young adolescents' course enrollment intentions and performance in mathematics. *Journal of Educational Psychology*, 82, 60–70.
- Nagel, E. (1961). *The structure of science*. New York: Harcourt, Brace and World.
- O'Brien, G. T., & Borkovec, T. D. (1977). The role of relaxation in systematic desensitization: revisiting an unresolved issue. *Journal of Behavior Therapy and Experimental Psychiatry*, 8, 359–364.
- O'Leary, K. D., & Wilson, G. T. (1987). *Behavior therapy: application and outcome* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Orenstein, H., & Carr, J. (1975). Implosion therapy by tape-recording. *Behaviour Research and Therapy*, 13, 177–182.
- Ozer, E., & Bandura, A. (1990). Mechanisms governing empowerment effects: a self-efficacy analysis. *Journal of Personality and Social Psychology*, 58, 472–486.
- Pajares, F., & Miller, M. D. (1994). Role of self-efficacy and self-concept beliefs in mathematical problem solving: a path analysis. *Journal of Educational Psychology*, 86, 193–203.
- Phillips, S., & Levine, M. (1975). Probing for hypotheses with adults and children: blank trials and introjects. *Journal of Experimental Psychology: General*, 104, 327–354.
- Rescorla, R. A., & Solomon, R. L. (1967). Two-process learning theory: relationships between Pavlovian conditioning and instrumental learning. *Psychological Review*, 74, 141–182.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*, 80 (1. Whole No. 609).
- Schroeder, H. E., & Rich, A. R. (1976). The process of fear reduction through systematic desensitization. *Journal of Consulting and Clinical Psychology*, 44, 191–199.
- Schunk, D. H. (1989). Self-efficacy and cognitive skill learning. In C. Ames & R. Ames (Eds.), *Research on motivation in education. Vol. 3: Goals and cognitions* (pp. 13–44). San Diego: Academic Press.
- Schunk, D. H., & Hanson, A. R. (1985). Peer models: influence on children's self-efficacy and achievement. *Journal of Educational Psychology*, 77, 313–322.
- Schunk, D. H., & Hanson, A. R. (1989). Self-modeling and children's cognitive skill learning. *Journal of Educational Psychology*, 81, 155–163.
- Schunk, D. H., Hanson, A. R., & Cox, P. D. (1987). Peer-model attributes and children's achievement behaviors. *Journal of Educational Psychology*, 79, 54–61.
- Schwartz, B. (1978). *Psychology of learning and behavior*. New York: Norton.
- Schwarzer, R. (1992). Self-efficacy in the adoption and maintenance of health behaviors: theoretical approaches and a new model. In R. Schwarzer (Ed.), *Self-efficacy: thought control of action* (pp. 217–243). Washington, D.C.: Hemisphere.
- Siegel, R. G., Galassi, J. P., & Ware, W. B. (1985). A comparison of two models for predicting mathematics performance: social learning versus math aptitude-anxiety. *Journal of Counseling Psychology*, 32, 531–538.
- Smith, R. E. (1989). Effects of coping skills training on generalized self-efficacy and locus of control. *Journal of Personality and Social Psychology*, 56, 228–233.
- Speilberger, C. D., & DeNike, L. D. (1966). Descriptive behaviorism versus cognitive theory in verbal operant conditioning. *Psychological Review*, 73, 306–326.
- Taylor, K. M., & Popma, J. (1990). An examination of the relationships among career decision-making self-efficacy, career salience, locus of control, and vocational indecision. *Journal of Vocational Behavior*, 37, 17–31.
- Tversky, A., & Kahneman, D. (1974). Judgment under

- uncertainty: heuristics and biases. *Science*, 185, 1124–1131.
- Williams, S. L. (1992). Perceived self-efficacy and phobic disability. In R. Schwarzer (Ed.), *Self-efficacy: thought control of action* (pp. 149–176). Washington, D.C.: Hemisphere.
- Wollman, N., & Stouder, R. (1991). Believed efficacy and political activity: a test of the specificity hypothesis. *The Journal of Social Psychology*, 131, 557–566.
- Wood, R., & Bandura, A. (1989a). Social cognitive theory of organizational management. *Academy of Management Review*, 14, 361–384.
- Zimmerman, B. J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for academic attainment: the role of self-efficacy beliefs and personal goal-setting. *American Educational Research Journal*, 29, 663–676.