

## **Gauging the Relationship Between Self-Efficacy Judgment and Action**

**Albert Bandura**

*Stanford University*

Psychological theorizing and research tend to center on issues concerning either acquisition of knowledge or execution of response patterns. As a result, the processes governing the interrelationship between knowledge and action have been largely neglected (Newell, 1978). Some of the recent efforts to bridge this gap have been aimed at clarifying the mechanisms by which action plans guide the production of appropriate response patterns (Stelmach, 1976, 1978). The relationship between knowledge and action is also significantly mediated by self-referent thought. The issues addressed in this line of inquiry are concerned with how people judge their capabilities and how, through their self-percepts of efficacy, they affect their actions (Bandura, 1977, 1980).

Self-efficacy is concerned with judgments of the likelihood that one can organize and execute given courses of action required to deal with prospective situations. Perceived self-efficacy can have diverse effects on behavior, thought patterns, and affective arousal. Self-percepts of efficacy influence choice behavior. People tend to avoid tasks they believe exceed their coping capabilities, but they undertake and perform assuredly activities they judge themselves capable of managing (Bandura, 1977). Self-judged efficacy also determines how much effort people will expend and how long they will persist in the face of obstacles and aversive experiences. The stronger the perceived self-efficacy, the more vigorous and persistent are their efforts (Brown & Inouye, 1978; Schunk, 1979).

People's perceptions of their own capabilities can also influence their thought processes and emotional reactions during anticipatory and actual transactions with the environment. People who judge themselves ineffectual in coping with environmental demands tend to generate high emotional arousal, become excessively preoccupied with personal deficiencies, and

cognize potential difficulties as more formidable than they really are (Beck, 1976; Lazarus & Launier, 1978; Meichenbaum, 1977; Miller, 1979; Sarason, 1975). The greater the perceived inefficacy, the higher is the self-generated distress on any given task (Bandura, Adams, Hardy, & Howells, 1980). Such self-referent concerns tend to undermine effective use of the competencies people possess.

People continuously have to make decisions about whether or not to attempt certain courses of action, and how long to continue those they have undertaken. Accurate appraisals of one's own capabilities are therefore of considerable value in successful functioning. Misjudgments of efficacy in either direction have consequences. People who grossly overestimate their capabilities undertake tasks that are clearly beyond their reach. As a result, they get themselves into considerable difficulties, and suffer needless distress and failures, if not injuries. Those who underestimate their capabilities also bear costs, although these are more likely to take self-limiting rather than aversive forms. Such individuals typically avoid beneficial environments and activities that would expand their competencies.

### **MICROANALYSIS OF THE RELATIONSHIP BETWEEN EFFICACY JUDGMENT AND ACTION**

Some of the issues examined in research on self-efficacy have been concerned with different aspects of the relationship between environmental influences, self-percepts of efficacy, and action. The most precise test of the link between self-efficacy judgment and action is provided by computing the degree of congruence between these two sets of factors on individual tasks. In the microanalytic procedure adopted for this purpose, subjects are provided with a list of the performance tasks included in the behavioral test and are instructed to designate those they judge they can do. For each task so designated, they rate the strength of their self-judged efficacy on a 100-point probability scale, ranging in 10-unit intervals, from high uncertainty, through intermediate values of certainty, to complete certitude. Later, their performance attainments are assessed. The measure of congruence is obtained by computing the percent of accurate correspondence between efficacy judgment and actual performance on the set of tasks.

In the preceding analysis, actions are related to self-efficacy judgments without regard to their strength. If the efficacy criterion is set at a low value (e.g., 20), a weak sense of self-efficacy receives the same weight as one reflecting complete certitude. However, the intensity and persistence

of effort, and hence level of performance, should be higher with strong than with weak self-efficacy. By gauging strength of self-efficacy, the micro-analytic procedure permits an even more refined analysis of the relationship between self-efficacy judgment and action. In the behavioral domain it has been shown that the stronger the perceived self-efficacy the higher is the likelihood that a particular task will be executed (Bandura, Adams, & Beyer, 1977).

Microanalyses based on individual tasks also provide the most precise information on how level of fear arousal varies with perceived coping efficacy. In this analysis the strength of subjects' perceived self-efficacy for each performance task is recorded, as is the amount of fear they later experience immediately prior to, and while performing each of the tasks. The fear intensity corresponding to varying strengths of perceived self-efficacy is then computed. The findings show that perceived inefficacy is accompanied by high anticipatory and performance fear arousal, but as strength of perceived self-efficacy increases, fear arousal declines (Bandura et al., 1980).

To quantify relationships one can also correlate aggregate self-efficacy scores with aggregate performance scores. But evidence that a lot of efficacy judgments go together with a lot of behavior is of lesser interest if the research is aimed at clarifying how specific judgments of self-efficacy are linked to specific acts.

Kirsch (1980) is of the view that the predictive power of self-efficacy judgment is better revealed by correlating aggregate scores than by computing congruity on specific tasks. In discussing the relative merits of these two approaches, he notes that the congruence index cannot presuppose a 50% match between efficacy judgment and action by chance alone. Contrary to the implications of his article, a 50% chance value has never been assumed. Indeed, the level of chance congruence between efficacy judgment and action would vary depending on the level of self-judged efficacy and performance attainments exhibited in any given case. Figure 1 provides data for two illustrative subjects from the study to which Kirsch refers (Bandura & Adams, 1977). For each subject the assessments were conducted with two different threats to yield a total of 36 tasks.

If we consider the 36 instances in the left panel of the figure, we could ask about the expected chance congruence given 24 self-judgments of efficacy and 21 performance successes. The frequencies that would be expected by chance for each cell can be obtained by computing the product of the marginal totals corresponding to the cell and dividing the product by the total number. The expected chance values in each cell are bracketed. Level of congruence is obtained by summing the frequencies in the two congruent cells (+ +; - -) and dividing the total number of instances. For

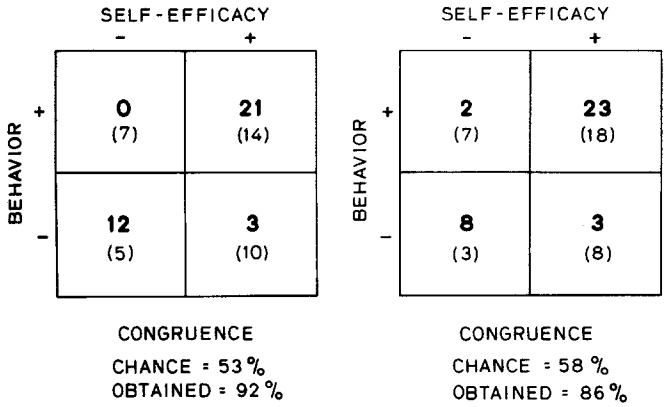


Fig. 1

these two subjects the actual congruences are 92% and 86% and the expected chance congruences are 53% and 58%, respectively.

For the total sample of 10 cases the mean level of chance congruence is 58%, whereas the obtained congruence is 84%. Actual congruence exceeds the chance value of congruence for every subject in the sample. This level of predictiveness far surpasses what might be expected by chance alone ( $p < .001$ ).

Kirsch's method for estimating the level of chance congruence is somewhat different. He assumes that if a subject expects to succeed on task  $n$ , it is presumed that the subject also expected to succeed on the prior  $n - 1$  tasks. This presupposes a perfectly ordered hierarchical set of tasks. While this is true in the lower and middle range of the particular efficacy scale under discussion, the order of difficulty in the upper range can be somewhat variable. For example, some subjects judge themselves more capable of tolerating a snake in their laps than holding it in front of their faces, even though the former task is usually the more difficult one. In other efficacy scales, such as those we have recently developed for gauging cognitive functioning, the order of task difficulty is not that easily discernible.

Kirsch records in his Table I the number of congruences and incongruences at each level of self-efficacy for a subject who performs 40% of the tasks. He then sums all the possibilities to obtain an overall value (i.e., 79 congruences). This procedure assumes that the different instances are equally probable. In the example where the hypothetical subject performs 4 tasks out of 10, it is assumed that a self-judged efficacy of 10 successes is to be weighted exactly the same as a self-efficacy of 2 successes. Thus, if we had several weight lifters who could lift only 100 pounds, Kirsch's technique

requires that we view their efficacy judgments about the weights they could actually lift as uniformly distributed over the entire range of weights. His chance model postulates that people's judgments about their performance are totally random with respect to level. A weight lifter who could lift only 100 pounds would as likely judge himself able to lift 300 pounds as to lift 30 pounds. Similarly, a snake phobic who could at most look timorously at a caged snake at a safe distance would expect to be just as able to handle the writhing beast as to approach the cage. The assumption underlying this procedure, which inflates chance estimates, is debatable. The formulas Kirsch provides presuppose the validity of the procedure used to estimate the expected chance congruence.

Based on the above assumptions, Kirsch estimates that, for a subject who performed 40% of the tasks, the degree of chance congruence is 72%. Since the group as a whole supposedly performed, on the average, about 40% of the tasks, he selects this 72% figure as the chance value against which to compare the actual congruence of 84% for the entire sample. The rationale for using an "average" case as the comparative base rate for an entire group is questionable, as is the method selected for determining chance levels.

The discussion thus far has centered on only one type of analysis that can be performed on data yielded by a microanalytic procedure. Judgments of self-efficacy are dichotomized into positive and negative instances based on a minimum criterion of strength, and then congruences are computed. As will be recalled from the earlier discussion, efficacy judgments serve as even better predictors of specific actions and level of fear arousal when strength of self-efficacy is taken into consideration. In any event, research that addresses itself to the link between self-judgment and action should examine how they match on individual tasks rather than how judgments and actions thrown into aggregates go together.

Focus on chance estimates based on implausible assumptions should not divert attention from the issue of central interest. The point is not that efficacy judgments exceed chance, however it might be computed, but that self-percepts of efficacy are good predictors of how people are likely to behave and how much emotional arousal they will experience on specific tasks regardless of whether their self-efficacy is enhanced by enactive mastery, vicarious experience, reduction of emotional arousal, or cognitive rehearsal (Bandura et al., 1980). The explanatory and predictive value of self-percepts of efficacy are of special interest in changes produced by non-enactive modes of influence. Since they do not involve behavioral enactments, people have to select, weigh, and integrate other sources of efficacy information in forming generalizable percepts of their capabilities as guides for their behavior.

## REFERENCES

- Bandura, A. Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 1977, 84, 191-215.
- Bandura, A. Self-referent thought: The development of self-efficacy. In J. H. Flavell & L. D. Ross (Eds.), *Cognitive social development: Frontiers and possible futures*. New York: Cambridge University Press, 1980, in press.
- Bandura, A., & Adams, N. E. Analysis of self-efficacy theory of behavioral change. *Cognitive Therapy and Research*, 1977, 1, 287-310.
- Bandura, A., Adams, N. E., & Beyer, J. Cognitive processes mediating behavioral change. *Journal of Personality and Social Psychology*, 1977, 35, 125-139.
- Bandura, A., Adams, N. E., Hardy, A. B., & Howells, G. N. Tests of the generality of self-efficacy theory. *Cognitive Therapy and Research*, 1980, 4, 39-66.
- Beck, A. T. *Cognitive therapy and the emotional disorders*. New York: International Universities Press, 1976.
- Brown, I., Jr., & Inouye, D. K. Learned helplessness through modeling: The role of perceived similarity in competence. *Journal of Personality and Social Psychology*, 1978, 36, 900-908.
- Kirsch, I. "Microanalytic" analyses of efficacy expectations as predictors of performance. *Cognitive Therapy and Research*, 1980, 4, 259-262.
- Lazarus, R. S., & Launier, R. Stress-related transactions between person and environment. In L. A. Pervin & M. Lewis (Eds.), *Perspectives in interactional psychology*. New York: Plenum Press, 1978.
- Meichenbaum, D. H. *Cognitive-behavior modification: An integrative approach*. New York: Plenum Press, 1977.
- Miller, S. M. Controllability and human stress: Method, evidence and theory. *Behaviour Research and Therapy*, 1979, 17, 287-304.
- Newell, K. M. Some issues on action plans. In G. E. Stelmach (Ed.), *Information processing in motor control and learning*. New York: Academic Press, 1978.
- Sarason, I. G. Anxiety and self-preoccupation. In I. G. Sarason & C. D. Spielberger (Eds.), *Stress and anxiety* (Vol. 2). Washington, D.C.: Hemisphere, 1975.
- Schunk, D. *Self-efficacy in achievement behavior*. Unpublished doctoral dissertation, Stanford University, 1979.
- Stelmach, G. E. (Ed.). *Motor control: Issues and trends*. New York: Academic Press, 1976.
- Stelmach, G. E. (Ed.). *Information processing in motor control and learning*. New York: Academic Press, 1978.