How Motives, Skills, and Values Determine What People Do

David C. McClelland *Harvard University*

ABSTRACT: According to general behavior theory, motives, probability of success (or skill), and incentive value are three independent organismic determinants of excitatory potential (or the impulse to act) that combine with situational opportunity to determine response strength or response probability. Much confusion has been introduced into human motivation theory by investigators' failure to measure separately motive strength (from coding operant thought) and incentive value (from value attitude questionnaires) and by their misuse of the term motivation. *Motivation properly refers to an aroused motive, but they have broadened it to mean* excitatory potential, *which is determined partly by the aroused motive and partly by probability of success, incentive value, and other variables. Research is reviewed that demonstrates the importance of motivation, incentive value, and probability of success, independently measured, for predicting achievement performance and the frequency with which affiliation acts are performed. Both theory and experiment lead to the conclusions that motive strength, particularly in relation to the strength of other motives in the person, is the more important determinant of operant act frequency; that incentive value is the more important determinant of cognitively based choices; that motive strength and probability of success combine multiplicatively to predict response strength or probability; and that all determinants, plus this last interaction, together account for over 75% of the variation in operants like affiliative act frequency. The remainder of the variation is readily attributable to environmental opportunities.*

Psychologists have long realized that if they want to know how well something will be done, whether it is a rat running a maze or a boy playing the piano, it is important to know how much motivation and skill are involved. Clark Hull (1943) formalized this relationship in his well-known equation, sEr = D × sHr, in which excitatory potential (sEr) or the tendency to make a response is a function of habit strength (sHr) multiplied by drive strength (D). What he meant by habit strength was the amount of reinforced practice an animal had had in making a response previously, or in more general terms the skill it had acquired in making the response. Later Hull (1952) added a third variable to his equation to take into account the effect of incentive value on performance, for it was readily observed that rats ran faster for more or tastier food. The formula was expanded, again multiplicatively, to read as follows:

$$sEr = D \times sHr \times K \text{ (for incentive).}$$

Spence (1956) agreed that incentive value (K) was important. However, he felt that it should not be multiplied with the other determinants but should be added to drive strength and the sum of these two should be multiplied by habit strength. In his formulation, the presence of either drive or incentive would lead to some behavior if any habit strength existed, whereas in Hull's formulation if either incentive or drive was zero there would be no tendency to act.

Atkinson (1964) reviewed the relationship of the Hull–Spence equations to Lewinian theory, Tolman's expectancy theory, and decision theory and arrived at a formula very similar to Hull's except that the variables in it were defined in cognitive terms and were operationalized in measures obtained from human subjects rather than animals. His initial formula, as it applies to an achieving tendency, reads as follows:

$$Ts = Ms \times Ps \times INs.$$

The tendency to achieve success (Ts) is a multiplicative function of motive to achieve success (Ms), expectancy or probability of success (Ps), and incentive value of success (INs). Each of these terms needs further elaboration. In referring to Ts, Atkinson and others (e.g., Weiner, 1980) dropped Hull's term *excitatory potential* and employed the term *motivation* to describe the end product of all the determinants of action. That is, anything that influenced the tendency to respond was considered motivational. Thus, the term *motivation* became equivalent to *determination* and did not have its original restricted meaning. Recent textbooks on motivation (e.g., Franken, 1982; Weiner, 1980) include discussion of any variables (including skills, expectancies, incentives, coping mechanisms, etc.) that affect the strength of the impulse to act. But we still need a term that refers only to aroused motive states such as hunger

 0003-066X/85/$00.75
Vol. 40, No. 7, 812-825

or a need for achievement. It seems less confusing to use the term *motivation* to refer to such states and to use a more general term such as *impulse to respond* to refer to the final product of all the determinants of behavior.

Historically, there was an important reason for this change in the meaning of the term motivation as psychology shifted in a more cognitive direction. Psychologists such as Spence (1956) and Schachter and Singer (1962) detached the notion of drive from any distinctive physiological accompaniments, which made it easier to think of motivation in purely cognitive terms. Atkinson and Feather (1966) moved further in this direction by arguing that the term Ms × INs defined valence of success or the attractiveness of success. In these terms, Ms, measured by Atkinson by the Thematic Apperception Test (TAT) *n* Achievement score, became simply a measure of individual differences in the personal evaluation of succeeding at a class of activities in which the incentive value of evaluating performance in terms of a standard of excellence was involved. In other words, the notion that drives or motives had uniquely different physiological and affective bases was replaced by a purely cognitive conception of motives as the product of expectancies and values, accompanied by a general state of physiological arousal. Thus, there was no longer any reason to restrict the term motivation, because it was now conceived to be a product of cognitive variables. There was also no special reason to cling to TAT measures of motives, which had been designed to measure affectively charged associative networks, not conscious expectancies and values. Although Atkinson continued to use the TAT, some of his students took the cognitive implications of his theory seriously and dropped the TAT (Feather, 1982; Weiner, 1980) in favor of other measures that relied on more direct methods of assessing individual differences in the strength of valence.

But the abandonment of a more limited, physiologically based concept of motivation in favor of an exclusively cognitive concept was premature for several reasons. In the first place, there is evidence that specific physiological processes are associated not only with biological drives like hunger (cf. Mayer, 1955) but also with social motives like the need for power as measured in the TAT (McClelland, Davidson, Floor, & Saron, 1980; McClelland, Davidson, Saron, & Floor, 1980; McClelland, Ross, & Patel, 1984). Parallel cognitive representations of these motives in self-reports do not have such correlates (McClelland, 1984). In the second place, motives as measured in the TAT have more promise for predicting long-term operant trends in life than cognitively guided self-reports (McClelland, 1980). Third, as this article is designed to demonstrate, taking into account *both* motives in Hull's original sense *and* values as represented by the cognitive revolution in motivational theory greatly improves our ability to predict behavior.

Ms, the motive to achieve success, was operationalized as the *n*-Achievement score obtained from coding TAT stories, although Atkinson's general model (1958) was supposed to apply to any motive disposition scored in this way. That is, the tendency to seek any goal was conceived as the product of the motive for that goal, as measured in the TAT, times the expectancy of achieving it times the incentive value of the class of activities defining the goal. For the sake of simplicity in exposition, Atkinson's equation will be used to refer to the generic model of how motives, expectancies, and incentives combine to produce goal seeking. That is, the *s* in the equation will be taken to refer to success in seeking any goal rather than just to success in achievement situations, which is the way Atkinson (1964) defined *s*.

Later, Atkinson and Birch (1978) shifted away from what they called the traditional "episodic" view of behavior to a view that emphasized shifts in the stream of behavior. This focused greater attention on the percentage of time spent in various activities rather than on more traditional measures of the strength of a response to a stimulus such as choice, latency, and resistance to extinction. In this respect, Atkinson and Birch agreed with Skinner's (1966) suggestion that the probability of the occurrence of an operant response may reflect better than other measures of response strength what is commonly called "purpose." That is, the frequency with which a rat presses a bar to get food "when no correlated stimulus can be detected" (Skinner, 1966, p. 21) could easily be seen as representing the strength of its purpose (or drive or motive) in seeking food as opposed to doing other things (scratching itself, sniffing, etc.). Atkinson (1981) went further and suggested that the frequency orientation implied that the frequency with which achievement thoughts appeared in a TAT (or presumably any achievement-related activity) was a function not of the absolute strength of the achievement motive but of its strength relative to all the other motives operating in the situation.

Ps, or probability of success in attaining a goal, might be considered to be the cognitive equivalent

Portions of this article are based upon material from Chapter 13 of *Human Motivation* (pp. 514–546) by D. C. McClelland, 1985, Glenview, IL: Scott, Foresman. Copyright 1985 by Scott, Foresman and Company. Used with permission.

Requests for reprints should be sent to David C. McClelland, Harvard University, Department of Psychology and Social Relations, 1530 William James Hall, 33 Kirkland Street, Cambridge, Massachusetts 02138.

of Hull's habit strength, because the probability of success obviously varies with habit strength or skill. But Ps has additional meaning because it is determined not only by actual skill but also by the individual's *beliefs* about the efficacy of making a response that may be somewhat independent of the individual's skill in making it. Two types of such beliefs have been studied extensively. One type has to do with the efficacy of effort in bringing about a consequence through a particular response in a given situation (Weiner, 1980). The other type has to do with the generalized confidence (or lack of it as in learned helplessness, Seligman, 1975) a person has that he or she can bring about outcomes through instrumental activities of any kind. See the work by deCharms (1976) on the effects of helping people to feel like "origins" (originators) rather than pawns, or Bandura's work on self-efficacy training (1982). Along with actual skill, such beliefs enter in to determine the Ps variable.

The INs, or incentive value of success in attaining a goal, was originally conceptualized by Atkinson (1957) in a limited way to explain risk-taking behavior in an achievement situation. He defined the incentive value of success in an achievement situation as 1 − Ps, meaning that the more difficult the task (or the less the probability of succeeding at it), the greater the reward value of succeeding in performing it. If 1 − Ps is substituted in the general equation for predicting an achieving tendency (Ts), it multiplies with the other variables to produce the strongest tendency to achieve success when Ps = .50, which corresponds fairly well with actual preferences for tasks varying in difficulty. But in terms of Atkinson's general model, incentive value will be different for different motives, although he did not give much attention to how such incentives should be measured.

Even within the context of achievement motive theory, Parsons and Goff (1978), Maehr (1974), Maehr and Kleiber (1981), and others have asked what kinds of achievement or success are valued by older people, by people from other cultures, or by women, and they have found evidence that far more than difficulty of performance is involved in determining such incentive values. At this point, three conclusions seem justified about the extensive controversy that has developed over the issue of how to define the achievement incentive.

1. There is ample evidence that the moderate challenge incentive is crucial for individuals high in *n* Achievement; they will work harder when this incentive is present than when it is not present; that is, when tasks are too easy or too hard (Atkinson, 1958; Clark & McClelland, 1956; French, 1955). Nor will subjects high in *n* Achievement work harder when other incentives like getting time off from work are present (French, 1955).

2. The moderate challenge incentive seems to affect the performance of all people to some degree, regardless of their level of *n* achievement (Atkinson, 1958).

3. Many other incentives affect performance, such as time off from work (French, 1955), cooperative rather than competitive work (Gallimore, 1981), or career or social orientation in women (French & Lesser, 1964). So when Maehr (1974) criticized achievement motivation theory for being ethnocentric and individualistically oriented, he was right only to the very limited extent that the challenge incentive is considered the only way to define INs. Obviously, many other ways of defining such incentives exist. Even in the case of the challenge incentive, other values determine the areas of behavior in which such challenges are sought (French & Lesser, 1964).

What this means is that other more direct ways should be found for measuring the INs variable. The cognitive theorists have made their greatest contribution in this area because they have focused on asking subjects in a variety of ways what their goals are, how important achievement is to them, what defines success for them, and so on. Summary scores based on such value attitude surveys may be regarded as direct measures of the INs variable. A generation ago, deCharms, Morrison, Reitman, and McClelland (1955) demonstrated that the behavioral correlates of such a measure of achievement values (which they labeled *v* Achievement) were quite different from the behavioral correlates of the TAT *n* Achievement variable. For instance, *n* Achievement was significantly related to better performance on an anagrams test and to better recall of the achievement content of stories, whereas *v* Achievement was not. Subjects high in *v* Achievement, on the other hand, were more impressed by expert judgment, whereas those high in *n* Achievement were not. In other words, strong achievement values affect cognitive judgments, as they should if they are tapping INs.

McClelland (1980) has summarized the empirical evidence demonstrating that *v* Achievement and *n* Achievement measures are not tapping the same variable and that in general TAT motive measures are better at predicting long-term operant trends in action, whereas value attitude measures are better at predicting choices, attributions, and other such cognitively guided behavior. In the light of this evidence, it is misleading to consider self-report value attitude measures to be measures of human motive strength as Weiner (1980) did, for example, in considering scores from the Mehrabian (1969) achievement attitude survey to be a measure of achievement motivation. This not only makes it difficult to collate findings from two different, essentially unrelated measures of the achievement motive,

but it also collapses the motive and incentive variables that, in Hull's and Atkinson's formulations, are independent determinants of action. The positive contribution of measures like Mehrabian's is precisely that it helps to define the INs variable in the equation for the dynamics of action.

The remainder of this article is dedicated to demonstrating, with two examples from different areas, that motives, skills, and values are independent determinants of action and if taken together can account for a surprising amount of variation in operant levels of action.

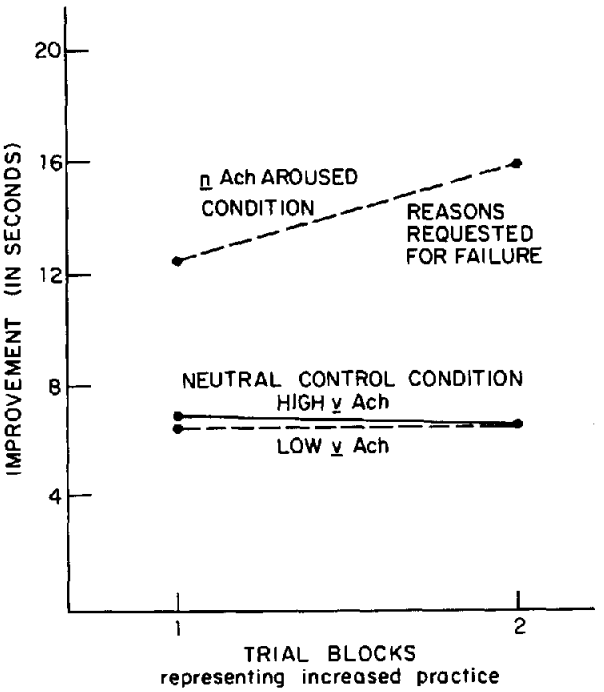
How the Achievement Motive, Skill, and Achievement Values Affect Performance

Although it is clear that values affect choices and shunt motivational energies in one direction or another (French & Lesser, 1964), it is not yet clear that they energize behavior and lead to faster learning of related activities in the way that motives do. The best evidence on this point comes from a number of studies that have shown that subjects high in *v* Achievement measured in various ways do not ordinarily perform better than subjects low in *v* Achievement (Atkinson & Litwin, 1960; deCharms et al., 1955). Because the point is an important one, it is worth examining in some detail through a recent study. Patten and White (1977) designed an experiment patterned after an earlier one conducted in Germany by Meyer (1973). Subjects were asked to complete four rows of digit symbol substitution in one minute. On the second trial, the subjects in the failure condition were interrupted on the fourth row because time was up, and therefore they failed to complete the task in the time allotted. They were then asked whether they had failed because of lack of effort, lack of ability, luck, or task difficulty. The measure of response strength was the improvement in time taken to complete the first three rows of digit symbol substitution on the next trial. As a control, another group of subjects was run through the experiment without experiencing failure. Although Meyer had originally used a measure of *n* Achievement obtained in the usual way from the TAT, Patten and White (1977) switched to a measure of *v* Achievement obtained from the Mehrabian questionnaire, although they referred to it as a measure of achievement motivation. They also ran some subjects under ego-involved conditions (without failure) when the achievement motive had been shown to be aroused (McClelland, Atkinson, Clark, & Lowell, 1953).

Some of the main results of this carefully designed experiment are shown in Figure 1. The improvement score represents a decrease in the number of seconds from the first trial to later trials. Note first that when the achievement motive has been aroused experimentally by failure, subjects gained significantly more in the second block of trials than they did in the first block of trials. No such improvement occurred for subjects in the neutral, no-failure condition. Furthermore, Meyer (1973) had shown that, for the same task, subjects who scored higher in *n* Achievement, defined here by Heckhausen's (1980) TAT-based approach measure that he called "hope of success" (p. 552), behave like those in whom the achievement motive has been experimentally aroused: They gain more from the first to the second block of trials than those low in *n* Achievement (see Heckhausen, 1980). This is a crucial point because it shows that the effect of increased motive strength is similar whether it is the result of individual differences or situational manipulations. To put it in a different way, those who score high in *n* Achievement perform better under task-oriented conditions just as those do whose achievement motive has been situationally aroused.

Technically, this confirms the following rela-

Figure 1
Effect of Aroused n *Achievement and Differences in* v *Achievement on Group Mean Block Improvement Scores*



Note. Reprinted from *Human Motivation* (p. 534) by D. C. McClelland, 1985, Glenview, IL: Scott, Foresman and Company. Copyright 1985 by Scott, Foresman and Company. Reprinted by permission. Data are from "Independent Effects of Achievement Motivation and Overt Attribution on Achievement Behavior" by R. L. Patten and L. A. White, 1977, *Motivation and Emotion, 1*, p. 44. Copyright 1977 by Plenum Publishing Company. Used by permission.

tionship in terms of Hull's equation or Atkinson's (1964) reformulation of it:

$$\text{Hull: } sEr = D \times sHr;$$

$$\text{Atkinson: } Ts = Ms \times Ps.$$

The tendency to work hard on the task (or performance) is a function of motive strength (represented by *n* Achievement) times skill (assuming that number of practice trials is associated with skill or probability of success).

But note in Figure 1 that a similar relationship does *not* hold if the *v* Achievement measure obtained from the Mehrabian questionnaire is used to estimate differences in achievement motivation strength. This is confirmation of the expectation that the Mehrabian measure is not a measure of the achievement motive. If we assume that it is a measure of the incentive value of success (or INs in Atkinson's terms), then we can write:

$$Ts \text{ (or } sEr) \neq INs \text{ (or } K) \times Ps \text{ (or } sHr).$$

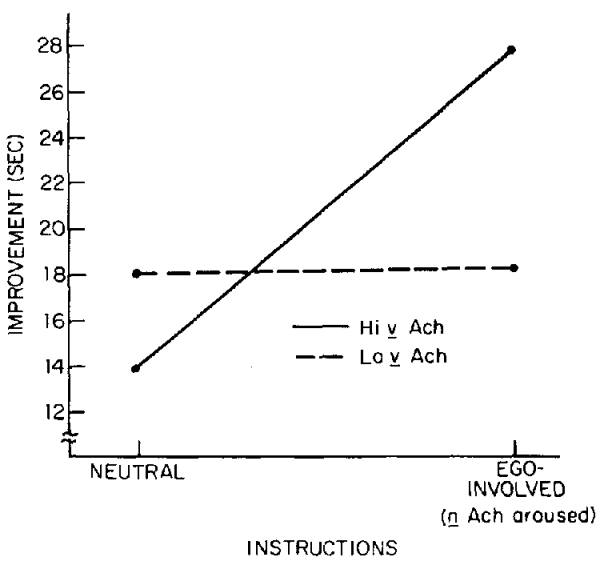
Freely translated, the tendency to work hard on the task is not a function of the incentive value of success (represented by the *v* Achievement measure) times skill (represented by number of practice trials). There is no greater improvement with practice for those high in *v* Achievement than for those low in *v* Achievement. The frequent failure of value attitude measures by themselves to predict performance the way motives do exists not only for laboratory tasks such as this one but also for outcomes in real life. For example, McClelland and Boyatzis (1982) have reported that the leadership motive syndrome in the TAT (high *n* Power, which is higher than *n* Affiliation, and high Activity Inhibition) is associated with greater effort and managerial success in a large company after eight years, whereas no value measures obtained from questionnaires such as the Edwards Personal Preference Schedule (Edwards, 1957) significantly predicted managerial success over the same period of time (see Bray, Campbell, & Grant, 1974).

However, it makes good sense to regard *v* Achievement as a measure of incentive strength, for Hull would also argue that if drive strength is zero, the product of incentive and habit would not increase sEr. That is, no matter how much practice the rat has had in pressing a bar to get food, nor how large the incentive, the rat will not press the bar if it is not hungry. This corresponds in the Patten and White experiment to the neutral, no-failure condition in which no achievement motive is aroused; although there are variations in the extent to which people in that condition value achievement, these variations do not affect their performance.

On the other hand, as Hull's formula would predict, if the achievement motive is aroused, then incentive value does make a difference. See Figure 2 which is taken from Patten and White (1977). When *n* Achievement was aroused through ego-involving instructions, those with high *v* Achievement performed much better than those for whom the incentive value of achievement was low (low *v* Achievement). This is analogous to a hungry rat responding to a greater degree when the reward is large than when it is small. It is as if valuing achievement increases the push to do better in this situation, once the subject's achievement motivation has been aroused. Figure 2 also confirms the fact that the difference in *v* Achievement has no effect on performance in the neutral condition when the achievement motive has not been aroused. In terms of Atkinson's equations, valence, the product of *n* Achievement (Ms) and *v* Achievement (INs), is reduced to zero if Ms is zero.

Furthermore, there is evidence in Patten and White's experiment for the joint effect of all three variables on response strength or the impulse to work hard at the task. For if the top curve in Figure 1 is broken down and plotted separately for those high and low in *v* Achievement, it appears that those high in *v* Achievement gain significantly more with practice, when the achievement motive is aroused

Figure 2
Total Group Mean Improvement Scores as a Function of Achievement Classification and Instructional Conditions



Note. Data are from "Independent Effects of Achievement Motivation and Overt Attribution on Achievement Behavior" by R. L. Patten and L. A. White, 1977, *Motivation and Emotion, 1*, p. 55. Copyright 1977 by Plenum Publishing Company. Used by permission.

through failure, than those low in *v* Achievement under similar conditions. In other words, Ts = Ms × Ps × INs, or the tendency to work hard equals *n* Achievement times practice times *v* Achievement. Patten and White (1977) were not interested in making such a multivariate prediction of performance, but their results support the inference that all of these variables should contribute to predicting response strength in some combination or another.

Factors Influencing Affiliative Acts and Choices

Constantian (1981) has carried out an experiment[1] that has several advantages for testing various ideas that have been put forward as to the way motives, values, and skills determine response strength. To begin with, she worked in the area of affiliation rather than achievement, which is an advantage because models of the dynamics of action proposed are supposed to be general although they have been applied only to achievement situations. Second, she obtained a measure of the frequency of operant or spontaneous affiliative acts over time, thus adopting a procedure that is a crucial part of the newest Atkinson and Birch (1978) model, although they have never employed it in their empirical work. To obtain this measure, she adopted a method reported earlier by Larson and Csikszentmihalyi (1978). Subjects who were summer school students were asked to wear electronic pagers or "beepers" (the type used by doctors) for a week. They were beeped seven times a day between the hours of 9 a.m. and 11 p.m. randomly in sets of two-hour periods (9–11 a.m., 11–1 p.m., and so forth). When they were beeped, they were to fill out a brief questionnaire explaining what they were doing at the time. The measure of operant affiliative activity was the proportion of times beeped when the person reported that he or she was conversing with someone or writing a letter to someone.

Constantian (1981) also obtained a more conventional measure of peoples' preferences for doing things with people, which we will call the affiliative choice measure. Subjects were asked to indicate on a scale of 1–7 how much they would like doing 15 different types of things with friends such as "working at a job," "doing errands," "visiting a museum," "living in an apartment," and so on.

The key question is how the affiliative motive combines with other factors to determine the strength of either operant affiliative acts or affiliative choices. She obtained a measure of *n* Affiliation coded in the usual way (see Heyns, Veroff, & Atkinson, 1958), from stories written to six pictures. To obtain a measure of the value subjects placed on affiliation, she summed a number of positive minus negative reactions to being with people. This will be referred to as the *v* Affiliation measure. Finally, a measure of the perceived probability of succeeding in social situations was obtained in the following way. Subjects rated themselves on a scale of 1–7 on a number of items such as "How often do you feel that you have handled yourself well at a social gathering?" (almost never–almost always), "How sure of yourself do you feel among strangers?" (not at all sure–extremely sure). The mean rating on these items represents subjects' estimates of their degree of social skill, or their perceived probability of success in social situations.

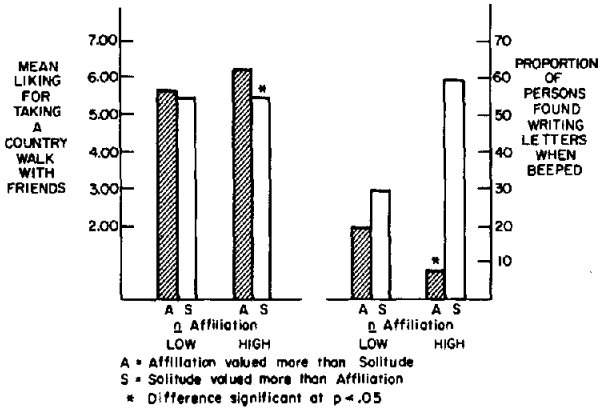
How Do Motives and Values Interact?

Constantian (1981) obtained not only a measure of *v* Affiliation but also a measure of the extent to which people valued solitude by using an exactly parallel method except that she substituted the phrase "being alone" for "being with people." Liking for solitude and liking for being with people were not highly correlated ($r = .14$, *ns*). So there are about as many people who feel positive about both being alone and about being with people as there are those who prefer one state to the other. Therefore, it proved possible to set up two groups, nearly equal in size, composed of people who either valued solitude more than affiliation or vice versa. The relationship of *n* Affiliation to various activities was different for these groups of people who differed in value orientations.

Figure 3 illustrates the point. Note first that for subjects low in *n* Affiliation valuing affiliation more than solitude had little effect on preference for taking country walks with friends. However, subjects who scored high in *n* Affiliation and who valued affiliation over solitude reported that they preferred taking country walks with friends more than those who valued solitude over affiliation. This is analogous to an incentive (in this case, a value) facilitating a response only when the motive it relates to is present. The right-hand side of Figure 3, however, shows a different result, this time for the proportions of persons found to be writing letters when they were beeped. In general, those who valued solitude were more likely to be found writing letters, but the difference was not significant for those low in *n* Affiliation. For subjects high in *n* Affiliation, on the other hand, a significantly higher proportion of those who valued solitude more than affiliation had been found writing letters than those who valued affiliation more than solitude. One might ask what it is that a person high in *n* Affiliation might do to

[1] Constantian was interested in studying people who preferred solitude, but the data she collected for that purpose were also suitable for the analyses reported here.

Figure 3
Effects of Differing Values on the Outlets of High Need for Affiliation



Note. Data are from *Attitudes, Beliefs, and Behavior in Regard to Spending Time Alone* by C. A. Constantian, 1981, unpublished doctoral dissertation, Harvard University, Cambridge, MA. Used by permission.

establish contact with others, if he or she valued solitude more than being with people. Clearly, one answer is to write letters, because letter writing is an activity that involves contact with people but that an individual can do alone. In short, values can readily shift the way *n* Affiliation is expressed in various activities. It is precisely this point that the situationist and cross-cultural critics of the *n* Achievement literature have failed to recognize in arguing that *n* Achievement is too individualistically defined (see Maehr, 1974; Parsons & Goff, 1978). It may be defined that way in some cultures but not in others, just as for some people valuing solitude is more important than valuing being with people. If the value is different, the outlet for the motive is different.

The Relationship of the Affiliative Motive, Social Skill, and Affiliative Values to Affiliative Acts and Choices

As theory would predict, the three presumably independent personality determinants of affiliative behaviors do not correlate very highly with each other. As Table 1 shows, the *n* Affiliation score is correlated with the *v* Affiliation score only at a barely significant level and is not at all correlated with the persons' estimates of their social skills. The *v* Affiliation and social skills scores are much more highly correlated because both are influenced by the subjects' cognitive understanding of what kind of people they are. In the one case, individuals were asked how much they liked being with people and in the other how successful they were when interacting with people. It seems reasonable to assume that judgments about social skill would be related to liking for being with people. Individuals who feel that they are shy and socially awkward are unlikely to respond by saying that they like being with people. Ideas about skill and liking are part of the person's general understanding of his or her relations to people. In this light, it seems surprising that liking to do things with friends (affiliative choices) is not related to perceived social skills (r = .06). The reason may be that the social skill items have more to do with dealing with strangers or unfamiliar situations and that some people who think they have poor social skills prefer doing things with friends precisely for

Table 1
Correlations of Personality Determinants With Each Other and With Affiliative Acts and Choices

	Motive	Value	Skill	Operant affiliative acts[a]	Respondent affiliative choices[b]
Motive:					
n Affiliation	—	.21*	.05	.42**	.21*
n Affiliation ratio[c]		.17	−.04	.45***	.19*
Value:					
v Affiliation		—	.45***	.17	.41***
Skill:					
Social skill			—	−.14	.06
Operant affiliative acts					.33*

Note. From *Human Motivation* (p. 535) by D. C. McClelland, 1985, Glenview, IL: Scott, Foresman. Copyright 1985 by Scott, Foresman and Company. Reprinted by permission. N = 111, except for the affiliative acts measure, in which case, N = 48.

[a] Percentage of times subjects were found conversing with others or writing letters when beeped.

[b] Subjects' mean liking for carrying out 15 activities with friends.

[c] T-score *n* Affiliation/T-score *n* Affiliation + T-score *n* Power + T-score *n* Achievement + T-score Activity Inhibition.

* $p < .05$. ** $p < .01$. *** $p < .001$.

that reason. This would reduce the expected positive association between the two variables.

Table 1 also shows that the three personality variables correlate differently with the two affiliative act outcome variables—one based on the frequency with which people were found to be engaged in affiliative acts when beeped and the other on the frequency with which they said they preferred to do things with friends. The motive measure, *n* Affiliation, predicts the operant affiliative act measure ($r = .42$, $p < .01$), but neither the value placed on affiliation nor perceived social skill predicts how often a person will be found to be interacting with others. However, choosing to do things more often with friends (the affiliative choices measure) may also be regarded as a way of estimating the strength of the value an individual places on affiliation. This estimate of *v* Affiliation does correlate significantly with the frequency of operant affiliative acts ($r = .33$, $p < .05$).

The affiliative choices outcome measure is predicted at a borderline level by *n* Affiliation ($r = .21$, $p < .05$) and more strongly by the *v* Affiliation measure ($r = .41$, $p < .001$). The difference in the two correlations approaches significance ($p < .10$). Perceived social skill is also uncorrelated with affiliative choices. Why should the *n* Affiliation score be more related to the operant affiliative acts score and the *v* Affiliation measure to the affiliative choices score? The key to understanding the difference lies in the realization that the acts score appears not to be primarily determined by the conscious perception or judgment of the subject. In contrast, values represent the conscious conceptions in terms of which people organize their experiences and preferences. If people answer in one part of the questionnaire that they like being with others, they should be more likely to answer in another part of the questionnaire that they prefer doing things with people. Both answers are determined by the conscious value the person places on affiliation. On the other hand, the affiliative motive score is less conscious and therefore does not automatically elicit the value that a person consciously places on affiliation. That is, the affiliative motive score hardly correlates with *v* Affiliation measures at all. It leads instead to more operant interactions with people because pleasure has been obtained from that type of interaction in the past in a way that has not been consistently coded into conscious values. Many of the relationships of motive dispositions to operant activities have been missed by psychologists (see McClelland, 1980) because they typically use self-report measures in which there is a large cognitive element that is only imperfectly related to the motive disposition. As Table 1 makes clear, motives are more important for predicting what people will spontaneously do, whereas values are more important for determining what they will cognitively decide should be done.

Table 1 also presents the results for the *n* Affiliation ratio in order to check the possibility suggested by Atkinson's analysis (1981) that it is not so much the absolute strength of *n* Achievement as its strength relative to other motives in the situation that accounts for the frequency of achievement-related thoughts in the TAT. It seems reasonable to check whether a similar principle applies to predicting the frequency with which operant acts will occur as a function of the strength of the relevant motive in relation to other motives measured in the situation, although Atkinson (1981) did not make such a suggestion. Constantian also scored the TATs for the need for Power, the need for Achievement, and for Activity Inhibition—a measure reflecting a concern for controlling one's behavior (see McClelland, 1975). The motive ratio is the strength of *n* Affiliation relative to all measured motivational tendencies present in the person. Its correlation with the operant affiliative acts score is slightly higher in line with prediction, though not significantly so.

Predicting Affiliative Interaction

Can we predict differences in the level at which individuals engage in affiliative behavior? There has been considerable skepticism on this point ever since Mischel (1968) summarized evidence suggesting that there was little consistency in personality and that what little there was could be explained in terms of the consistency of situational rather than personal determinants of behavior. Some of the skepticism arose out of the failure of alternative measures of the same variable to correlate with each other at a very high level, much as the *v* Affiliation and *n* Affiliation measures correlate only minimally in the Constantian study. Some of the skepticism arose from the low level of correlation of individual predictors to outcomes. In this study they also vary between .20 and .40, just as Mischel claimed they generally do. Therefore, Mischel concluded that we can account for very little of the variation in response levels that individuals show. Some of the skepticism arose from the measured unreliability of personality measures, particularly those derived from so-called projective tests, like *n* Affiliation. All of these questions need to be addressed before the prediction of affiliative behavior can be considered.

The first two sources of skepticism can readily be dealt with in the framework of a model of predicting behavior by multiple regression. On theoretical grounds, it is an advantage if variables such as *v* Affiliation and *n* Affiliation do not intercorrelate if they both contribute to a multiple correlation predicting the level of affiliative interaction in a

regression equation. From the same viewpoint, it is scarcely surprising that any one predictor would have a low correlation with the outcome variable if the theoretical model argues that there are three predictors that determine the outcome. But before turning to see if the multiple regression model in fact deals with these sources of skepticism, we must consider the issue of unreliability. Is it even worth trying to predict a person variable like operant level of affiliative interaction if the measure of it is completely unreliable?[2]

There is reason to suppose such measures might be unreliable because the usual test–retest or split-half reliabilities of operant thought measures taken from the TAT, such as *n* Achievement or *n* Affiliation, hover around .20 to .40 (Entwisle, 1972; McClelland, et al., 1953). One possible reason for this low measured reliability is the cognitive set established in all projective tests to "be creative," which may be interpreted by subjects to mean that they should vary their responses (see McClelland, 1980). At any rate, when this set is broken by instructing subjects that they can tell the same or different stories the second time depending on how they feel, reliabilities of the motive measures derived from the TAT move up to the region of .60 (McClelland, 1985; Winter & Stewart, 1977). In contrast, the cognitive set for questionnaire measures that ask subjects to honestly report their feelings or attitudes is to "be consistent," which subjects interpret to mean that they should answer questions the same way they did the last time they answered the questionnaire. For this reason, the measured reliabilities of questionnaire-based variables are almost certainly too high. A second reason these reliabilities are inflated is that many questionnaires contain items referring to the past that require subjects to give the same replies each time they answer the questions (McClelland, 1980).

Because no cognitive set to "be consistent" is involved in determining whether a person engages in affiliative acts, one might suppose that the reliability of this score might be about what it is for operant thought measures like *n* Affiliation. Such is the case: The correlation between the number of affiliative acts reported on odd versus even beeps was .61, $p < .001$. If the reliability is estimated for doubling the number of observations by the Spearman–Brown prophecy formula, it turns out to be .76, demonstrating a very considerable consistency in affiliative interaction. The pessimism about the lack of consistency in personality engendered by Mischel's (1968) review is unwarranted, at least insofar as levels of affiliative interaction are concerned. Note that the consistency involves not only temporal stability but it also applies across situations—on the street, in one's room, walking to class, at lunch, and so on. The key point may be that it is operant consistency, which by definition is not so tied to specific eliciting stimuli.

The Joint Effect of Personality Factors on Affiliative Interaction

Granted that affiliative interaction levels are stable enough for us to attempt to predict them, how much better do we do by using all three personality determinants to predict interaction levels than by using any one of them? By using the technique of multiple correlation, we can determine the effects of motives, values, and perceived skills, combined, on predicting affiliative acts or choices. Table 2 shows that the variation of frequency of affiliative acts can be predicted quite well by taking all three of its possible determinants and their interactions into account. The partial *r*s simply confirm in a purer form what was previously shown in Table 1, namely, that the affiliative motive score is the sole significant contributor to predicting the affiliative acts score, and the affiliative value score is the sole significant predictor of the affiliative choices score once the effect of other variables is removed. The effect of all three variables taken together is to increase the ability to predict operant affiliative interaction levels over and above a prediction obtained from any one of the personality determinants. The *R* is .60, considerably higher than the correlation of .42 between *n* Affiliation, as a single determinant, and levels of affiliative interaction. The *R* for predicting affiliative choices is not increased appreciably by taking all three presumed personality determinants into account.

The joint effect of motives, values, and perceived social skill on affiliative interaction levels is even more striking if different estimates of *n* Affiliation and *v* Affiliation strength are used. If the analysis shown in Table 2 is carried out using the *n* Affiliation ratio rather than the *n* Affiliation score, the *R* is .76, and if the respondent affiliative choices measure is used to estimate *v* Affiliation in an identical analysis, the *R* rises to .84. In this instance, all three determinants contribute significantly to predicting affiliative interaction, with *n* Affiliation ($p < .01$) and *v* Affiliation ($p < .06$) as primary determinants and perceived social skill in interaction with *n* Affiliation ($p < .01$). Both of these *R*s are significantly higher

[2] Atkinson and Birch (1978) and Atkinson (1981) have argued persuasively that internal consistency is not a necessary prerequisite for a measure of individual differences in a model of the mind in which tendencies are constantly competing for expression. However, it may be objected that their computer simulations to demonstrate the point deal with theoretical, not actual, operant acts and in any case as a practical matter many psychologists still have an interest in how internally consistent a measure is.

Table 2
Predicting Frequency of Affiliative Acts and Choices From Personality Determinants

	Affiliative acts[a]			Affiliative choices[b]	
	Partial *r*s	*p*		Partial *r*s	*p*
Motive:					
n Affiliation	.39	<.001		.14	ns
Value:					
v Affiliation	.19	*ns*		.40	<.001
Skill:					
Social skill	−.24	*ns*		−.14	*ns*
R = .48		<.01	.45		<.01
Interactions					
Motive × Value	−.19	*ns*		−.07	*ns*
Motive × Skill	.41	<.01		.09	*ns*
Value × Skill	−.12	*ns*		.10	*ns*
R = .60		<.01	.46		<.01
Gain in *R* by adding in interactions		<.05			*ns*

Note. Reprinted from *Human Motivation* (p. 538) by D. C. McClelland, 1985, Glenview, IL: Scott, Foresman and Company. Copyright 1985 by Scott, Foresman and Company. Reprinted by permission. For affiliative acts, $N = 48$, and for affiliative choices, $N = 111$.

[a] Percentage of times subjects were found conversing with others or writing letters when beeped.

[b] Subjects' mean liking for carrying out 15 activities with friends.

than the correlation for *n* Affiliation alone as the single predictor. In fact, they suggest that we may be able to account for a truly remarkable amount of the variation in levels of spontaneous interaction among individuals by adopting a multivariate approach using these three particular types of personality variables, as McClelland (1951) had argued long ago. The usual way of interpreting *R*s is to square them and say that we have accounted for 58% to 71% of the variance in affiliative interaction frequency, but as D'Andrade and Dart (1984) have pointed out it makes more sense to say that we have accounted for between 76% to 84% of the variation in levels of spontaneous interaction. These values are far above the usual .40 levels obtained with the single variable predictions that have given such cause for discouragement among students of personality.

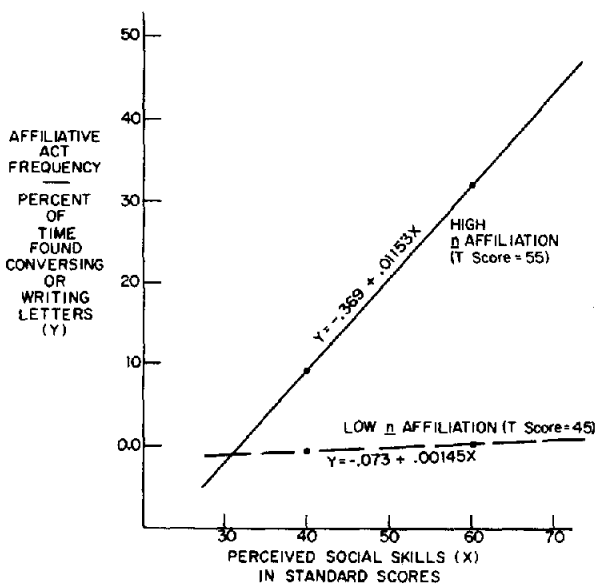
Surely pessimism about the inconsistency of personality or our inability to make sense out of it seems premature in the light of such findings. To be sure, a determined skeptic might argue, as Mischel (1968) has, that we can do just about as well at predicting a particular behavior either from the person's own judgment of how much he or she engages in that behavior or from how often he or she has engaged in it in the past. The first argument does not fit the facts in the present study. Subjects were also asked to estimate what proportion of their waking hours they spent interacting with people. These estimates correlated only .37, $p < .05$, with the proportion of times they were found to be interacting with people when beeped. The second argument has more basis in fact, because the affiliative interaction frequency on one half of the occasions subjects were beeped correlates .61 with the interaction frequency on the other half of the occasions they were beeped. If we estimate what the correlation would be for double the number of occasions by the Spearman–Brown prophecy formula, it comes to .76, which means we should be able to predict future interactive behavior about as well from such past behavior as we can from all our personality measures. There are two limitations to such an argument. One is that the .76 value is only an estimate, whereas the *R*s based on personality measures are values that were actually obtained. It is by no means certain that the Spearman–Brown prophecy formula works as well for operant as it does for respondent behaviors. For example, in the present study *n* Affiliation correlated .37, $p < .05$, with operant affiliative act frequency both in the sample of odd-numbered beeps and in the sample of even-numbered beeps. If, on the basis of the Spearman–Brown formula, we calculated what this correlation would be if we doubled the number of beeps, the estimated value is .54. The actually obtained correlation between *n* Affiliation and the frequency of interaction on all the occasions sampled is only .42.

More important, predicting future behavior from past behavior gives us no idea of the determinants of the behavior and how they interact to promote it, and these are precisely the questions of greatest theoretical importance.

Interactions of the Determinants of Affiliation Behavior

Atkinson (1964), Hull (1952), and Spence (1956) have made specific predictions as to how motivation interacts with skill or perceived probability of success to affect behavior. So, the interaction terms in Table 2 are of particular interest. They show that only the motive times perceived skill interaction contributes significantly to predicting the operant affiliative acts score as the theoretical models would predict. In fact, the addition of this interaction raises the multiple correlation from .48 to .60, a statistically significant increase. Its meaning is more clearly illustrated by Figure 4, which shows that perceived social skill contributes to predicting affiliative act frequency only if *n* Affiliation is high. The figure plots the relationship between perceived social skill and affiliative acts when *n* Affiliation is assumed to be high (half a standard deviation above the mean) or low (half a standard deviation below the mean). Even when subjects with low *n* Affiliation perceived themselves as highly successful in social situations, they showed no increase in the frequency with which they were found conversing with another person. This interaction was also very significant and positive when the same *R* analyses were made employing either the *n* Affiliation ratio or the affiliative choices measure of *v* Affiliation.

Figure 4
Interaction of Affiliative Motive Strength and Social Skill in Predicting Affiliative Act Frequency



Note. Reprinted from *Human Motivation* (p. 539) by D. C. McClelland, 1985, Glenview, IL: Scott, Foresman and Company. Copyright 1985 by Scott, Foresman and Company. Reprinted by permission.

To put the finding in a different way, a person's belief that he or she is likely to be successful in social interaction does not lead to more interaction unless that individual is motivated to use the skill. If a person wants to affiliate, perceived skill in affiliating will greatly increase the likelihood that he or she will be found conversing with others, but not if the person is uninterested in affiliating.

This result is similar to the one obtained in the achievement area in Patten and White's (1977) experiment in which a different motive (*n* Achievement) and different measure of the skill variable (number of practice trials) were employed. That is, in Figure 1, the upper line as contrasted with the lower two lines shows that those in whom *n* Achievement is higher gain more from practice, which should contribute to probability of success. In that instance and in the Constantian experiment, motive and skill estimates combine to increase response strength, defined in the affiliation experiment as response probability.

In the affiation study, too, there is no significant interaction of the value and skill measures. Subjects who value affiliation more do not engage in more affiliative acts the greater their perceived social skill. This is analogous to the finding in Patten and White's (1977) experiment that subjects high in *v* Achievement did not perform better than those with low *v* Achievement with increased practice (or probability of success). See the bottom two lines in Figure 1. The interaction is also negative when the *n* Affiliation ratio is entered into the multiple regression, and it is significantly positive when the other measure of *v* Affiliation is utilized. The safest conclusion is that values do not combine with skill in promoting a behavior the way that motives do. The finding may seem contrary to common sense because we often assume that we would be more likely to perform an activity, such as exercising, if we consider it important and if we perceive ourselves as skillful at various ways of doing the activity, that is, at getting exercise by jogging, playing tennis, and so on. But the findings in these two experiments suggest that this is not the case. Exercise would have to satisfy some motive for us to do it more often, and then greater perceived skill would lead us to exercise more often as shown in Figure 4.

The results for the third interaction in Table 2 (the interaction between motive [*n* Affiliation] and value [*v* Affiliation]) are not the same as in Patten and White's experiment, because their study showed that high *v* Achievement improved performance if the motive was aroused or high. Here, the trend is in the opposite direction. The trend is not significantly negative in Table 2, but it becomes so if either the *n* Affiliation ratio or the new measure of *v* Affiliation is entered into the equation. Such a

result means that *n* Affiliation makes more of a difference in promoting interactive behavior when *v* Affiliation is low than when it is high. This would be analogous to saying that hunger makes more of a difference in promoting maze running in a rat when the incentive is unattractive than when it is attractive, or in this case if people do not value affiliation, *n* Affiliation makes more of a difference in promoting affiliative behavior.

Nevertheless, because of the lack of fit with Patten and White's results we cannot draw a firm conclusion about how a person's valuing an activity and also being motivated to perform it combine to change the likelihood that the person will actually engage in that activity. Perhaps it makes a difference whether one is trying to predict how well someone can do something, as in Patten and White's experiment, versus how often he or she will interact with others.

The motive times perceived skill combination does not contribute to predicting the affiliative choice measure, nor do the two other interactions (M × V or V × S) contribute significantly to predicting that measure. In other words, in predicting conscious choices, values do not combine with perceived social skills, nor is the effect of multiplying motives times values significant.

Next, we should examine the third-order interactions directly because in both Hull's (1943) and Atkinson's (1964) models it is assumed that the three determinants of response strength multiply with each other. Thus, we would like to see the effect for predicting affiliative behavior of multiplying M × S × V. But it is not possible to do so meaningfully with these data because of multicollinearity. In other words, multiplying the variables two at a time has taken up so much of the explanatory power of the determinants that there is none left over to be accounted for by multiplying all three together. However, there is an approximate way to test the applicability of Hull's (1943) model and Spence's (1956) model. It will be recalled that Spence argued that if either incentive (here called value, or V) or drive (here called motive, or M) were present, some behavior would result, whereas in Hull's model, if either of these variables were reduced to zero the equation would predict no response. Thus, Spence suggested that M and V should be added rather than multiplied as in Hull's model. So we can treat either the sum or the product of these two determinants as independent variables in a multivariate prediction of affiliative behavior. Then we can see whether either the product (M × V) or the sum (M + V) times perceived social skill contributes significantly to predicting affiliative behavior. In this instance, Hull's formula works and Spence's formula does not. That is, the product of M × V contributes significantly to predicting operant affiliative acts (partial $r = .46$) or conscious affiliative choices (partial $r = .39$), and so does the sum of M + V: The partial *r*s are .49 and .39, respectively, but only the (M × V) × S interaction (Hull's equation) contributes significantly to predicting the affiliative acts score (partial $r = .37$, $p < .01$) and raises the *R* from .47 to .57, a gain that approaches significance ($p < .10$). The (M + V) × S interaction (Spence's equation) does not contribute significantly to predicting the affiliative acts score nor to increasing the *R*.

Neither Hull's nor Spence's method of combining the M, V, and S determinants improves the *R* for the affiliative choice measure of response strength. The results are the same as in Table 2. The only significant contributor to predicting affiliative choices is *v* Affiliation: Neither motive nor perceived skill level nor their interaction is related to reports of liking to do things with friends.

Predicting Operants and Respondents

The results of the study of affiliative interaction confirm the importance of the distinction Skinner (1966) made between operants (responses "for which no correlated stimulus can be detected" [p. 21]) and respondents (responses that are "correlated with specific eliciting stimuli" [p. 20]). The affiliative act frequency measure does not appear to be associated with any specific eliciting stimulus, and as Skinner suggested, such operants involve "essentially the field of purpose" (Skinner, 1966). In this instance and in others reported in McClelland (1980), the motive measure based on the TAT best predicts such operant behavior. Affiliative choices may also be conceived of as responses to specific eliciting stimuli, that is, to contrived stimulus situations represented by questionnaire items. Conscious self-referent respondents of this type are determined almost entirely by values deriving from the same cognitive source as the choices. People carry around with them cognitive schemas that organize their feelings, attitudes, and choices in a particular area such as affiliation or achievement. When people are asked whether they would like doing something "with friends," the question taps a value associated with liking for people that determines how they answer the question.

On the other hand, the frequency with which people converse with someone else is determined primarily by the pleasure they more or less unconsciously receive from such interactions, as reflected in the strength of the affiliative motive measured in imaginative thought, and also by the perceived probability of success, given a high level of *n* Affiliation. People's conscious recognition of the importance of affiliative activity probably occurs after the fact when

people observe that they do spend a great deal of time interacting, and therefore they infer that such interaction is important to them. The distinction made here between conscious cognitions and less conscious affectively toned associative networks is basic in personality study, as demonstrated in other areas of research such as Silverman's (1976) reports that people react to rapidly presented emotional phrases very differently when they recognize the phrases and when they do not.

It is important for students of personality to recognize that operant and respondent behaviors are different and are predicted by different determinants. Respondent behaviors seem to be largely determined by cognitive schemas and operant behaviors by the variables and their interactions previously thought to be important in general behavior theory. That is, when indicators of the three key variables in general behavior theory—motive (*n* Affiliation), skill (perceived social skill), and incentive (*v* Affiliation)—are entered into a multiple regression equation to predict operant affiliative interactions in combination, they account for 76% to 84% of the variation in interaction levels, a truly remarkable result that should encourage us to believe that a science of personality is indeed possible. If the environment were also entered into the equation in the form of a dummy variable for whether the person could interact or not (excluding cases when the beeper woke them when asleep or sounded in a noisy subway), then nearly all the variation in interactive behavior would be accounted for.

We need more studies of this sort that show the joint effect of motives, skills, and values or schemas as joint determinants of what people do (i.e., their operant behaviors) as well as what they consciously say they choose to do (i.e., their respondent behaviors).

REFERENCES

Atkinson, J. W. (1957). Motivational determinants of risk-taking behavior. *Psychological Review, 64,* 359–372.

Atkinson, J. W. (1958). Towards experimental analysis of human motivation in terms of motives, expectancies, and incentives. In J. W. Atkinson (Ed.), *Motives in fantasy, action, and society* (pp. 288–305). Princeton, NJ: Van Nostrand.

Atkinson, J. W. (1964). *An introduction to motivation.* New York: Van Nostrand.

Atkinson, J. W. (1981). Thematic apperceptive measurement of motivation in 1950 and 1980. In G. D'Ydewalle & W. Lens (Eds.), *Cognition in human motivation and learning* (pp. 159–198). Hillsdale, NJ: Erlbaum.

Atkinson, J. W., & Birch, D. (1978). *Introduction to motivation* (2nd ed). New York: Van Nostrand.

Atkinson, J. W., & Feather, N. T. (1966). *A theory of achievement motivation.* New York: Wiley.

Atkinson, J. W., & Litwin, G. H. (1960). Achievement motive and test anxiety conceived as motive to approach success and motive to avoid failure. *Journal of Abnormal and Social Psychology, 60,* 52–63.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37,* 122–147.

Bray, D. W., Campbell, R. J., & Grant, D. L. (1974). *Formative years in business: A long term study of managerial lives.* New York: Wiley.

Clark, R. A., & McClelland, D. C. (1956). A factor analytic integration of imaginative and performance measures of the need for achievement. *Journal of General Psychology, 55,* 73–83.

Constantian, C. A. (1981). *Attitudes, beliefs, and behavior in regard to spending time alone.* Unpublished doctoral dissertation, Harvard University, Cambridge, MA.

D'Andrade, R. G., & Dart, J. (1984). *The interpretation of* r *versus* r^2. Unpublished manuscript, University of California at Irvine, Irvine, CA.

deCharms, R. (1976). *Enhancing motivation: Change in the classroom.* New York: Irvington.

deCharms, R., Morrison, H. W., Reitman, W. R., & McClelland, D. C. (1955). Behavioral correlates of directly and indirectly measured achievement motivation. In D. C. McClelland (Ed.), *Studies in motivation* (pp. 414–423). New York: Appleton-Century-Crofts.

Edwards, A. L. (1957). *The social desirability variable in personality assessment and research.* New York: Dryden Press.

Entwisle, D. (1972). To dispel fantasies about fantasy-based measures of achievement motivation. *Psychological Bulletin, 77,* 377–391.

Feather, N. T. (Ed.). (1982). *Expectations and actions: Expectancy-value models in psychology.* Hillsdale, NJ: Erlbaum.

Franken, R. E. (1982). *Human motivation.* Monterey, CA: Brooks/Cole.

French, E. G. (1955). Some characteristics of achievement motivation. *Journal of Experimental Psychology, 50,* 232–236.

French, E. G., & Lesser, G. S. (1964). Some characteristics of the achievement motive in women. *Journal of Abnormal and Social Psychology, 68,* 119–128.

Gallimore, R. (1981). Affiliation, social context, industriousness and achievement. In R. H. Munroe & B. B. Whiting (Eds.), *Handbook of cross-cultural human development.* New York: Garland STPM.

Heckhausen, H. (1980). *Motivation und Handeln* [Motivation and performance]. Berlin: Springer-Verlag.

Heyns, R. W., Veroff, J., & Atkinson, J. W. (1958). A scoring manual for the affiliation motive. In J. W. Atkinson (Ed.), *Motives in fantasy, action and society.* New York: Van Nostrand.

Hull, C. L. (1943). *Principles of behavior.* New York: Appleton-Century-Crofts.

Hull, C. L. (1952). *A behavior system.* New Haven: Yale University Press.

Larson, R., & Csikszentmihalyi, M. (1978). Experiential correlates of time alone in adolescence. *Journal of Personality, 46,* 677–693.

Maehr, M. L. (1974). Culture and achievement motivation. *American Psychologist, 29,* 887–896.

Maehr, M. L., & Kleiber, D. A. (1981). The graying of achievement motivation. *American Psychologist, 36,* 787–793.

Mayer, J. (1955). Regulation of energy intake and body weight: The glucostatic theory and the lipostatic hypothesis. *Annals of the New York Academy of Science, 63,* 15–43.

McClelland, D. C. (1951). *Personality.* New York: Sloane, Dryden, Holt.

McClelland, D. C. (1975). *Power: The inner experience.* New York: Irvington.

McClelland, D. C. (1980). Motive dispositions: The merits of operant and respondent measures. In L. Wheeler (Ed.), *Review of personality and social psychology* (Vol. 1). Beverly Hills, CA: Sage.

McClelland, D. C. (1984). *On the two psychologies of love.* Unpublished manuscript, Department of Psychology and Social Relations, Harvard University.

McClelland, D. C. (1985). *Human motivation.* Glenview, IL: Scott, Foresman.

McClelland, D. C., Atkinson, J. W., Clark, R. A., & Lowell, E. L. (1953). *The achievement motive.* New York: Appleton-Century-Crofts.

McClelland, D. C., & Boyatzis, R. E. (1982). The leadership motive pattern and long-term success in management. *Journal of Applied Psychology, 67,* 737–743.

McClelland, D. C., Davidson, R. J., Floor, E., & Saron, C. (1980). Stressed power motivation, sympathetic activation, immune function and illness. *Journal of Human Stress, 6*(2), 11–19.

McClelland, D. C., Davidson, R., Saron, C., & Floor, E. (1980). The need for power, brain norepinephrine turnover and learning. *Biological Psychology, 10,* 93–102.

McClelland, D. C., Ross, G., & Patel, V. (1984). *The effect of an academic examination on salivary norepinephrine and immunoglobulin levels.* Unpublished manuscript, Department of Psychology and Social Relations, Harvard University.

Mehrabian, A. (1969). Measures of achieving tendency. *Educational and Psychological Measurements, 29,* 445–451.

Meyer, W.-U. (1973). *Leistungsmotiv und Ursachenerklarung von Erfolg und Misserfolg* [The achievement motive and causal attributions for success and failure]. Stuttgart: Klett.

Mischel, W. (1968). *Personality and assessment.* New York: Wiley.

Parsons, J. E., & Goff, S. B. (1978). Achievement motivation and values: An alternative perspective. In L. J. Fyans, Jr. (Ed.), *Achievement motivation: Recent trends in theory and research* (pp. 349–373). New York: Plenum Press.

Patten, R. L., & White, L. A. (1977). Independent effects of achievement motivation and overt attribution on achievement behavior. *Motivation and Emotion, 1,* 39–59.

Schachter, S., & Singer, J. E. (1962). Cognitive, social, and physiological determinants of emotional states. *Psychological Review, 69,* 379–399.

Seligman, M. E. P. (1975). *Helplessness: On depression, development, and death.* San Francisco: Freeman.

Silverman, L. H. (1976). Psychoanalytic theory: "The reports of my death are greatly exaggerated." *American Psychologist, 31,* 621–637.

Skinner, B. F. (1966). *The behavior of organisms.* Englewood Cliffs, NJ: Prentice-Hall.

Spence, K. W. (1956). *Behavior theory and conditioning.* New Haven, CT: Yale University Press.

Weiner, B. (1980). *Human motivation.* New York: Holt, Rinehart, & Winston.

Winter, D. G., & Stewart, A. J. (1977). Power motive reliability as a function of retest instructions. *Journal of Consulting and Clinical Psychology, 45,* 436–440.