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## Self-Schemata and Processing Information About the Self

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Attempts to organize, summarize, or explain one's own behavior in a particular domain result in the formation of cognitive structures about the self or *self-schemata*. Self-schemata are cognitive generalizations about the self, derived from past experience, that organize and guide the processing of the self-related information contained in an individual's social experience. The role of schemata in processing information about the self is examined by linking self-schemata to a number of specific empirical referents. Female students with schemata in a particular domain and those without schemata are selected and their performance on a variety of cognitive tasks is compared. The results indicate that self-schemata facilitate the processing of information about the self (judgments and decisions about the self), contain easily retrievable behavioral evidence, provide a basis for the confident self-prediction of behavior on schema-related dimensions, and make individuals resistant to counterschematic information. The relationship of self-schemata to cross-situational consistency in behavior and the implications of self-schemata for attribution theory are discussed.

The quantity and variety of social stimulation available at any time is vastly greater than a person can process or even attend to. Therefore, individuals are necessarily selective in what they notice, learn, remember, or infer in any situation. These selective tendencies, of course, are not random but depend on some internal cognitive structures which allow the individual to process the incoming information with some degree of efficiency. Recently, these structures for encoding and representing information have been called *frames* (Minsky, 1975), *scripts* (Abelson,

1975), and *schemata* (Bobrow & Norman, 1975; Stotland & Canon, 1972; Tesser & Conlee, 1975).

The influence of cognitive structures on the selection and organization of information is probably most apparent when we process information about ourselves. A substantial amount of information processed by an individual (some might even argue a majority of information) is information about the self, and a variety of cognitive structures are necessarily involved in processing this information. Yet in research on the self, in the per-

sonality area for example, there has been a notable lack of attention to the structures used in encoding one's own behavior and in the processing of information about one's own behavior. Research on self-perception (Bem, 1967, 1972) and research on self-monitoring (Snyder, 1974; Snyder & Monson, 1975) clearly suggests that the individual is an active, constructive information processor, but no specific cognitive structures have yet been implicated in this theorizing and research.

It is proposed here that attempts to organize, summarize, or explain one's own behavior in a particular domain will result in the formation of cognitive structures about the self or what might be called self-schemata. *Self-schemata are cognitive generalizations about the self, derived from past experience, that organize and guide the processing of self-related information contained in the individual's social experiences.* The main purpose of the present studies is to examine some functions of self-schemata in the processing of information about the self.

Self-schemata include cognitive representations derived from *specific* events and situations involving the individual (e.g., "I hesitated before speaking in yesterday's discussion because I wasn't sure I was right, only to hear someone else make the same point") as well as more *general* representations derived from the repeated categorization and subsequent evaluation of the person's behavior by himself and by others around him (e.g., "I am very talkative in groups of three or four, but shy in large gatherings," "I am generous," "I am creative," or "I am independent").

Self-schemata are constructed from information processed by the individual in the past and influence both input and output of information related to the self. They repre-

sent the way the self has been differentiated and articulated in memory. Once established, these schemata function as selective mechanisms which determine whether information is attended to, how it is structured, how much importance is attached to it, and what happens to it subsequently. As individuals accumulate repeated experiences of a certain type, their self-schemata become increasingly resistant to inconsistent or contradictory information, although they are never totally invulnerable to it.

Self-schemata can be viewed as a reflection of the invariances people have discovered in their own social behavior. They represent patterns of behavior that have been observed repeatedly, to the point where a framework is generated that allows one to make inferences from scant information or to quickly streamline and interpret complex sequences of events. To the extent that our own behavior exhibits some regularity or redundancy, self-schemata will be generated because they are useful in understanding intentions and feelings and in identifying likely or appropriate patterns of behavior. While a self-schema is an organization of the representations of past behavior, it is more than a "depository." It serves an important processing function and allows an individual to go beyond the information currently available. The concept of self-schema implies that information about the self in some area has been categorized or organized and that the result of this organization is a discernible pattern which may be used as a basis for future judgments, decisions, inferences, or predictions about the self.

There is substantial historical precedent for the schema term and for schemalike concepts, and it would entail a very lengthy discussion to trace the history of the term (cf. Bartlett, 1932; Kelley, 1972; Kelly, 1955; Piaget, 1951). In social psychology, schema-like concepts (e.g., causal schemata, scripts, implicit personality theories) have generally been vaguely defined heuristics with no real empirical moorings. Despite their assumed cognitive consequences, they have been viewed primarily as epiphenomena, inferred on the basis of behavior or invoked in various post hoc explanations. The investiga-

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tion of self-schemata requires examining the hypothesized functions of schemata for their particular empirical implications. To date this has not been done.

Recent work in the general area of cognition suggests a number of ways of investigating self-schemata. This work provides models of information processing (e.g., Anderson & Bower, 1973; Atkinson & Shiffrin, 1968; Erdelyi, 1974), indicates the possible functions of cognitive structures, and makes use of a variety of measures (recognition, recall, response latency, etc.) and techniques (signal detection, chronometric descriptions of information flow, etc.) capable of empirically identifying these functions. The experimental work in this area, however, has concentrated largely on the processing of neutral or nonsense material. With the exception of some recent work (Mischel, Ebbesen, & Zeiss, 1976) there has been little empirical work on the influence of cognitive structures on the selective processing of significant *social* information (e.g., information about important aspects of one's self).

The idea of self-schemata as cognitive generalizations about the self has a number of implications for the empirical work on personality and cross-situational consistency. For example, an endorsement of a trait adjective as self-descriptive or an endorsement of an item on a self-rating scale *may* reflect an underlying, well-articulated self-schema. It is equally possible, however, that the mark on the self-rating scale is not the product of a well-specified schema, but is instead the result of the favorability of the trait term, the context of the situation, the necessity for a response, or other experimental demands. *Only when a self-description derives from a well-articulated generalization about the self can it be expected to converge and form a consistent pattern with the individual's other judgments, decisions, and actions.* Thus, a person who does not really think about herself as conscientious, yet would not object to labeling herself as such, cannot be expected to react to being late for an appointment in the same way as one who actively conceives of herself as conscientious, who can readily describe numerous displays of conscientiousness in the past, and who

can enumerate the way she insures future conscientious behavior on her part.

To demonstrate the construct validity of the concept of self-schemata, a number of empirical referents can be specified. If self-schemata are built up from cognitive representations of past experiences, individual differences in self-schemata should be readily discovered because individuals clearly differ in their past experiences. If a person has a developed self-schema, he should be readily able to (a) process information about the self in the given domain (e.g., make judgments or decisions) with relative ease, (b) retrieve behavioral evidence from the domain, (c) predict his own future behavior in the domain, and (d) resist counterschematic information about himself. If a person has had relatively little experience in a given domain of social behavior or has not attended to behavior in this domain, then it is unlikely that he will have developed an articulated self-schema.

Consistency in patterns of response on a number of self-description tasks, as well as convergence in results from a number of diverse cognitive tasks involving self-judgments, should provide evidence for the existence of an organization of knowledge about the self on a particular dimension of behavior, or a self-schema. To the extent that individuals do not possess an articulated self-schema on a particular dimension of behavior, they will not exhibit consistency in response. Nor will they display the discrimination necessary for the efficient processing of information and the prediction of future behavior along this dimension.

The procedure of the first study is to select a dimension of behavior, to identify individuals with schemata and those without schemata on this dimension, and then to compare their performance on a variety of cognitive tasks. Several tasks utilizing self-rating, self-description, and prediction of behavior are combined to determine whether the processing of information about one's self varies systematically as a function of self-schemata. The second study investigates the selective influence of self-schemata on the interpretation of information about one's own behavior. Individuals with articulated self-

schemata (along a specific behavioral dimension identified in the first study) and individuals without such schemata are induced to engage in behavior that is potentially diagnostic of this dimension. The impact of this information is evaluated for both groups.

### Study 1

This study is concerned with the impact of self-schemata on the selection and processing of information about the self. Individuals with self-schemata along a particular dimension of behavior are compared with individuals without such self-schemata. Also compared are individuals with different self-schemata along the same dimension of behavior. Specifically, it is hypothesized that a self-schema will determine the type of self-judgments that are made and that these judgments will vary in latency depending on the presence and content of self-schemata. Also, individuals with self-schemata should find it easier to describe specific behavior that is related to their schema and should be relatively more certain about prediction of their behavior along this dimension than individuals without schemata.

### Method

To gain a preliminary idea of each subject's self-schema on various dimensions, a number of self-rating scales were administered in introductory psychology classes. The most appropriate pattern of variation in self-ratings was found on the independence-dependence dimension and thus it was selected as the dimension for further study. From among the individuals completing this questionnaire, 48 were selected to participate individually in the laboratory sessions.

The first laboratory session consisted of three separate cognitive tasks designed to assess the influence of self-schemata about independence on the processing of information about the self. These included:

1. *Content and latency of self-description.* Subjects were given a number of trait adjectives associated with independence and dependence and were asked to indicate for each whether it was self-descriptive or not. Response latency was recorded for each judgment.

2. *Supplying behavioral evidence for self-description.* Subjects were asked to select trait adjectives that were self-descriptive and then to cite instances from their own past behavior to support their endorsement of a particular adjective as self-descriptive.

3. *Predicting the likelihood of behavior.* Subjects were given a series of descriptions of independent and dependent behavior and were asked to judge how likely it was they would behave in these ways.

### Subjects

For the questionnaire phase of the experiment, subjects were 101 female students in introductory

psychology classes at a large university. Subjects for the first laboratory sessions were 48 students selected from this group. Only female students were used in this study because the distribution of self-ratings on various dimensions appears to differ with sex. Using male and female students would have required selecting more dimensions.

### Materials and Procedures

*Initial questionnaire.* Individuals in introductory psychology classes were asked to rate themselves on the Gough-Heilbrun Adjective Check List (Gough & Heilbrun, 1965) and on several semantic differential scales describing a variety of behavioral domains. On the latter measure, subjects were also asked to rate the importance of each semantic dimension to their self-description. From these respondents, three groups of 16 subjects each were selected to participate in the experimental sessions.

1. *Independents.* Individuals who rated themselves at the extreme end (points 8-11 on an 11-point scale) on at least two of the following semantic differential scales: Independent-Dependent, Individualist-Conformist, or Leader-Follower, and who rated these dimensions as important (points 8-11 on an 11-point scale), and who checked themselves as "independent" on the adjective check list were termed *Independents*.<sup>1</sup>

2. *Dependents.* Individuals who rated themselves at the opposite end (points 1-4) on at least two of these scales, and who rated these dimensions as important (points 8-11 on an 11-point scale), and who checked themselves as "dependent" on the adjective check list were termed *Dependents*.

3. *Aschematics.* Individuals who rated themselves in the middle range (points 5-7) on at least two of these three scales, and fell in the lower portion of the distribution on the importance scale, and did not check themselves as either "independent" or "dependent" on the adjective check list were termed *Aschematics*. The term *aschematic* is used here to mean without schema on this particular dimension.<sup>2</sup>

Invoking the importance criterion conjointly with the extremity criterion made it possible to avoid

<sup>1</sup> Although subjects were selected on the basis of their "extreme" scores on these self-rating scales, only 2 subjects of the 48 actually used the endpoints 11 or 1 in their self ratings on the semantic differential scales.

<sup>2</sup> Another indicator of a subject's self-schema about independence was her score on the Autonomy scale of the Gough-Heilbrun Adjective Check List (ACL). The Autonomy scale is one of the ACL's 24 empirically derived scales designed to correspond to dimensions of the California Psychological Inventory and Murray's need-press system. Autonomy is defined as the tendency to act independently of others or of social values and expectations. Subjects selected as *Independents* in this study were among the 25 with highest scores on this measure, and those selected as *Dependents* were among the 25 with lowest scores. *Aschematics* scored in the middle

confusing Aschematics with persons who act (and think of themselves) as independent in some classes of situations and as dependent in other classes of situations, and do so consistently. Making such fine discriminations would lead these individuals to develop a fairly well-articulated conception of the independence domain of social behavior, and thus it would be incorrect to classify them as Aschematics. However, if these people had a well-articulated conception of themselves as both dependent and independent, they would no doubt be quite sensitive to social behavior in the domain of independence and would consider it to be a significant and important area. Hence, they would not be classified as Aschematics according to our criteria. Among the Aschematics the average importance rating on the three semantic differential scales was 6.4, while among the Schematics it was 9.5.

Three to four weeks after the questionnaire was administered, the 48 subjects were called individually to the laboratory and received identical treatment. They were not informed of a connection between this session and the questionnaire, and it is unlikely that they could have inferred such a connection since different experimenters were used.

*Task 1: Content and latency of self-description.* Sixty-nine trait adjectives were prepared on 2 × 2 inch (5 × 5 cm) slides, 15 had been previously judged (by another group of 50 subjects) to be related to independence and nonconformity (independent words) and 15 were judged to be related to dependence and conformity (dependent words). These 30 words were the critical schema-related stimuli.<sup>3</sup> Thirty other words, included for comparison with the schema-related adjectives, clustered around the notions of creativity and noncreativity and were used as control words. In each group of 30 words, 10 were negatively rated, 10 were positively rated, and 10 neutral, according to Anderson's (1968) list of the likableness of 555 trait adjectives. The words were either of high frequency or moderate frequency (according to the norms of Carroll, Davies, & Richman, 1971). The remaining 9 words were 3 practice adjectives, 3 adjectives which nearly all subjects had indicated were self-descriptive on the initial questionnaire (honest, intelligent, friendly), and 3 adjectives which nearly all subjects had indicated were not self-descriptive (rude, obnoxious, unscrupulous).

Each of these 69 adjectives was presented on the screen for 2 seconds by a slide projector activated by the experimenter. Following the presentation of

a word, the subject was required to respond by pushing a *me* button if the word was self-descriptive, or a *not me* button if the word was not self-descriptive. The response stopped an electronic clock which began with the presentation of the stimulus. The subject had to respond with one of the two buttons before the next stimulus would appear. For each word the experimenter recorded both response latency and the choice of *me* or *not me*. Subjects were not aware that response latency was being measured. Four different randomly determined orders of presentations were used for the slides, with 12 subjects in each order. In addition, for half of the subjects the *me* button was on the right side of the panel and for the remaining half on the left side. To insure that individuals were associating similar types of behaviors to the trait adjectives, a particular context was specified for the self-judgments. The instructions were

When you are making these decisions about yourself, try to imagine yourself in a typical group situation, one that might occur for example, in a classroom, in the dorm lounge, or at a meeting in a friend's home. You are together to discuss an important and controversial issue and to make some decisions about it. Many of the people in the group you know or are familiar to you, while others are not.

*Task 2: Supplying behavioral evidence for self-descriptions.* After the categorization task, each subject received a booklet containing 16 words (1 on each page) from the set described in Task 1. Seven of these words were from the set of independent words and 7 were from the set of dependent words. Two additional words were from the creative/noncreative set. Of the 16 words, 4 were positively rated for likableness, 4 were negatively rated, and 8 were neutral. The order of the adjectives in each booklet was randomly determined. Subjects were given written instructions to circle each adjective they considered to be self-descriptive and were also asked the following:

Immediately after you circle an adjective, list the reasons you feel this adjective is self-descriptive. Give specific evidence from your *own* past behavior to indicate why you feel a particular trait is self-descriptive. . . . List the first kinds of behaviors that come to your mind. Do not worry about how other people might interpret a particular behavior; use your own frame of reference. (Several examples were given.)

range on this measure. It is important to note that all of the subjects who would be labeled autonomous on the basis of this measure (that is, they were among the 25 highest scorers) also rated themselves extremely (points 8–11) on at least two of the semantic differential scales. Those who would be labeled nonautonomous or dependent on the basis of this measure also rated themselves extremely (points 1–5) on the three semantic differential scales.

<sup>3</sup> The *independent* adjectives were: individualistic, independent, ambitious, adventurous, self-confident, dominating, argumentative, aloof, arrogant, egotistical, unconventional, outspoken, aggressive, assertive, uninhibited. The *dependent* adjectives were: dependable, cooperative, tactful, tolerant, unselfish, impressionable, conforming, dependent, timid, submissive, conventional, moderate, obliging, self-denying, cautious.

*Task 3: Predicting the likelihood of behavior.* The third task utilized a series of specific behavioral descriptions taken from a large number of descriptions that had been rated by a separate group of 40 introductory psychology students as characterizing either independence and nonconformity or dependence and conformity. This outside group of subjects was asked to decide how they would label or categorize each act if they saw it or if they heard someone describe themselves in these terms. The final list included 10 pairs of behavioral descriptions matched in content but differing in the way the behavior would be categorized, for example, "You hesitate before commenting, only to hear someone else make the point you had in mind" (rated dependent) and "You speak up as soon as you have some comments on the issue being discussed" (rated independent). Several filler items also were included. A context for the behavioral descriptions similar to the one in Task 1 was provided and then the subjects were given written instructions which read:

Listed below are a number of behaviors and reactions that might be true of you in a gathering like this. For each one, indicate how likely

or how probable it is that you would behave or react in this way. You may assign each item any number from 0 to 100. A 0 means that this could not be true of you, that it is extremely unlikely that you would act or feel this way. A 100 means that this could very well be true of you, that it is likely that you would act or feel this way.

*Results*

For the purpose of analysis, subjects were divided into three groups labeled Independents, Dependents, and Aschematics, as described in the Procedure section.

*Task 1: Content and latency of self-description.* As shown in the top panel of Figure 1, the three groups of subjects clearly differed in the average number of the 15 dependent words judged as self-descriptive,  $F(2, 45) = 14.89, p < .001$ . The three groups also differed in the average number of the 15 independent adjectives judged as self-descriptive,  $F(2, 45) = 9.27, p < .001$ . Using  $p < .05$  as a criterion, Newman-Keuls comparisons showed that Dependents judged significantly more dependent words as self-descriptive than did Independents, and conversely, Independents judged significantly more independent words as self-descriptive than did Dependents.

The bottom panel of Figure 1 presents the average response latencies for self-descriptive judgments (*me*) and for not self-descriptive judgments (*not me*) for the independent and dependent adjectives. Dependent subjects were reliably faster at making *me* judgments for dependent words than for independent words,  $t(15) = 2.63, p < .01$ .<sup>4</sup> Congruently, Independent subjects were reliably faster at making *me* judgments for independent adjectives than for dependent adjectives,  $t(15) = 2.72, p < .01$ . The Aschematics, however, did not differ in response latency for independent and dependent words.

When the top and bottom panels of Figure 1 are considered together, a number of other points about the self-categorization of these three groups of subjects can be made. A *me* response to a particular adjective may be the result of an individual labeling her be-

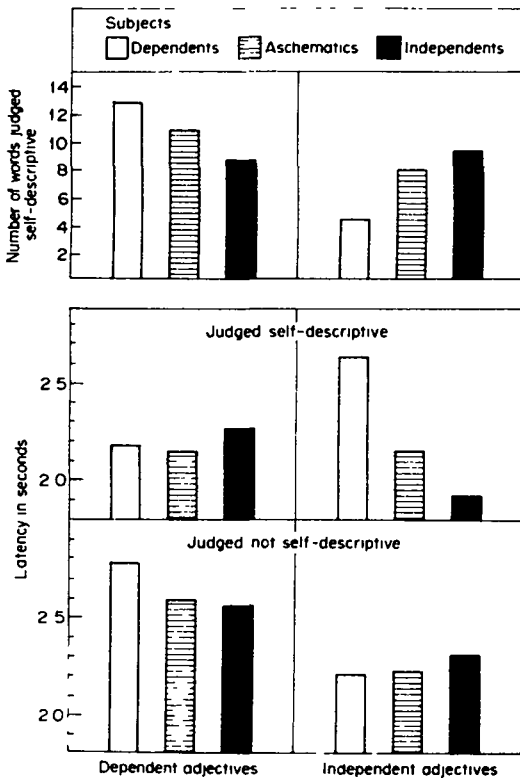


Figure 1. Top panel: Mean number of independent and dependent adjectives judged as self-descriptive. Bottom panel. Mean response latency for independent and dependent adjectives judged as self-descriptive and as not self-descriptive.

<sup>4</sup> Except where specified, all *t* tests are two-tailed.

havior or reactions in this way or thinking about herself in these terms. But it may also be the result of several other considerations, such as the positivity or social desirability of a particular adjective. Looking within groups, it can be seen from the top panel that Dependent subjects responded *me* to significantly more dependent words than independent words; there is a clear differentiation here,  $t(15) = 10.55, p < .001$ . Independent subjects however, although responding *me* to more independent words than either of the other two groups of subjects, found nearly as many dependent adjectives to be self-descriptive,  $t(15) < 1$ . On the basis of these findings alone, one might conclude that this group does not use independent or dependent words differentially or that independence is not a meaningful dimension for these subjects. The bottom panel indicates that this is not the case, however. Independent subjects respond much faster to the independent words than they do to the dependent words. The faster processing times for the independent words suggest that it is indeed easier for Independent subjects to think about themselves in these terms or that they are used to thinking about themselves in these terms.

The latency measure is also useful in interpreting the results of the Aschematic group. From the top panel it can be seen that Aschematics respond *me* to more dependent words than independent words,  $t(15) = 2.42, p < .05$ . If the response latencies for these judgments are ignored, one might take this to mean that these subjects are similar to the Dependents. It is evident, however, that Aschematic subjects do not really use these two sets of words differentially in describing themselves in the same way Dependent subjects do. There is no difference among Aschematic subjects in processing time for the two sets of words. Even though they were constrained to think of a specific social situation, Aschematics appear to be equally at ease labeling their behavior with independent or dependent adjectives.<sup>5</sup>

Response latency for self-categorization appears to be a sensitive measure which reveals variations in judgments that rating scales and check lists cannot. Endorsements

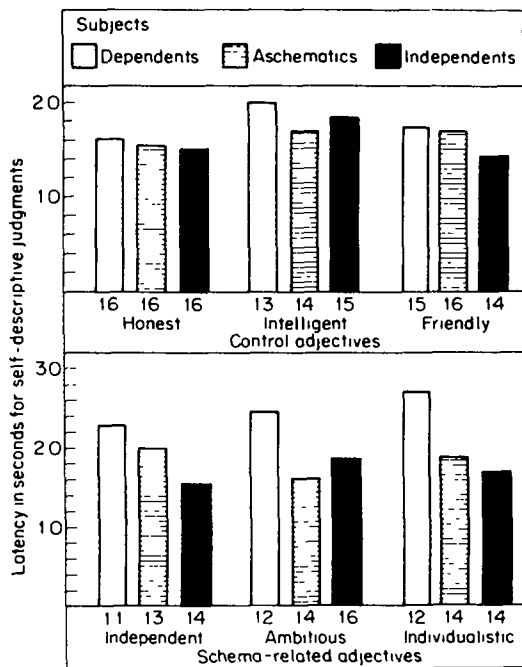


Figure 2. Mean response latency for schema-related and control adjectives

which result from the positivity or desirability of a stimulus can potentially be separated from responses which reflect more valid self-characterizations. This is clearly demonstrated in Figure 2. The top panel shows the responses of three groups of subjects to the three control words that were included in the list of presented adjectives. The number of subjects out of the total 16 that responded *me* to each word is shown beneath the bar.

<sup>5</sup> Overall, subjects find more dependent words than independent words to be self-descriptive, despite the fact that the two sets of words were initially matched for positivity and frequency. In fact, across all subjects an average of 7.4 independent words were judged to be self-descriptive compared to an average of 10.9 dependent words. This may also explain the relatively longer response times for *not me* judgments of dependent words obtained in all three groups of subjects. Across all subjects the average latency for a *not me* response to dependent words was 2.63 seconds compared with 2.22 seconds for independent words. It is possible that within the set of our 69 words (Anderson's subjects rated a set of 555 adjectives), the dependent words appeared as more positive or desirable, and thus it was difficult for subjects to respond *not me* to them.



Not surprisingly, nearly all subjects viewed themselves as honest, intelligent, and friendly. And there are no differences among the three groups in the processing time for these adjectives. The overall average latency for these three words was much shorter (1.67 sec) than the overall average latency for all words (2.23 sec). These adjectives appear to be synonymous with general "goodness" and do not convey unique information about an individual. The three groups of subjects also did not differ in processing time for *not me* judgments to the negatively rated adjectives rude, obnoxious, and unscrupulous.

This was not true, however, for other adjectives which presumably are tied to more specifically defined behaviors. The bottom panel of Figure 2 shows the responses of the three groups of subjects to three schema-related words, that is, three words from the set of independent words shown to subjects. Here again, just on the basis of their overt responses, it would appear that these subjects did not differ in their characterization of themselves, as the clear majority of subjects also responded *me* to these three schema-related words. The latency measures exhibited a much different pattern, however. Dependent subjects, for the most part, indicated that they were independent, ambitious, and individualistic, but it took them significantly longer to make this judgment than it did for Independent subjects. Separate analyses of variance performed on the response latencies for these three words yielded significant differences among the three groups of subjects: ambitious,  $F(2, 35) = 6.59, p < .01$ ; independent,  $F(2, 35) = 6.59, p < .01$ ; individualistic,  $F(2, 37) = 4.56, p < .01$ . It is probable that Dependent subjects would like to label themselves with these words and subsequently do, but they experience some difficulty endorsing the words, a difficulty they do not experience with the dependent words. This result cannot be explained by assuming that Dependent subjects just take longer to make self-judgments, for on the control adjectives the latencies of the Dependents did not differ from those of the other groups of subjects. The faster processing times of the Independent subjects on schema-related words may be indicative of schemata which contain information about independence and individu-

alism. Dependent subjects do not have information about themselves which might be reasonably labeled in this way, and their hesitation in making unsubstantiated judgments about themselves is reflected in relatively longer latencies.

The lack of differentiation in response latency to the schema-related adjectives shown by the Aschematics relative to the other two groups of subjects has been interpreted as evidence for the absence of a schema on this dimension. There is an alternative explanation, however. It may be that a clear self-definition in terms of one set of adjectives or another is not a result of past behavior which has been categorized or labeled in this way, but rather a function of general cognitive differentiation or articulation. Independents and Dependents might be individuals who generally prefer to have things compartmentalized along a number of different dimensions. Aschematics, in contrast, may have global or undifferentiated cognitive styles. A direct test of this possibility cannot be made given the present data. However, as an indirect test, an index which reflected the articulation of the schema for each subject was calculated on the basis of the number of independent and dependent words judged *me* and *not me*. The measure was the Kendall  $\tau_b$ , and it reflected a subject's departure from the standard of responding *me* to all 15 independent words and *not me* to all 15 dependent words. The closer the value to 1 or -1, the more clearly the subject defines herself on this dimension. This measure was also calculated for each subject on the basis of her *me* responses to the 30 creative/noncreative adjectives which were included in the list presented to subjects. A cognitive style explanation would predict that subjects with high  $\tau_b$  values (either positive or negative) on the independent/dependent adjectives would also be the subjects with high absolute values of  $\tau_b$  on the creative/noncreative words, reflecting a general tendency toward differentiation or articulation. In fact, there was no association between the sets of  $\tau_b$  absolute values for Independents ( $r = .00$ ), Dependents ( $r = -.07$ ), or Aschematics ( $r = -.14$ ).

The fact that subjects with schemata on independence-dependence do not necessarily have schemata on creativity-noncreativity

and vice versa indicates that differences in self-categorizations may be the result of an individual's behavior and its subsequent cognitive interpretation rather than a reflection of differences in the general complexity of cognitive structure. It is also consistent with the idea that individuals develop schemata on dimensions they choose to attend to and do not develop schemata on others.

*Task 2: Supplying behavioral evidence for self-description.* In this task, it was hypothesized that if one has a schema which is a reflection of past behavior, then one should be readily able to provide specific behavioral evidence related to it; that is, to generate specific instances of behavior which were labeled or categorized by oneself or others in a particular way.

This task appeared to be generally meaningful to subjects and they performed it with little difficulty. For example, the dependent adjective *conforming* elicited responses such as "I didn't go to any of the rallies about the teaching-fellow strike because my friends didn't" or "I watched a television show I couldn't stand last night just to save a hassle with my roommates" or "I pierced my ears because all my friends did."

Independent subjects wrote more behavioral descriptions for independent words than did either of the other two groups of subjects. The differences in the mean number of behavioral examples written for each independent adjective for the three groups were significant,  $F(2, 45) = 4.91$ ,  $p < .005$ . Across all of the seven independent adjectives, the Independent subjects supplied almost one specific example of behavior for each word (.93 behavioral descriptions per adjective) compared to .56 for the Aschematics and .36 for the Dependent subjects. A significant opposite pattern occurred for the dependent words,  $F(2, 45) = 3.59$ ,  $p < .05$ .

Across all the adjectives, the subjects with schemata (the Dependents and the Independents) and the Aschematics did not differ in the average number of words that were judged as self-descriptive, but they did differ in the average number of behavioral descriptions that were written for each word,  $t(46) = 1.78$ ,  $p < .05$ ,<sup>6</sup> with the Aschematics supplying somewhat fewer examples of behavior than subjects with schemata. This result is

consistent with the expectation that individuals without schemata on this dimension probably have not used many independent or dependent adjectives to label their behavior, and thus it should be more difficult for them to supply specific behavioral descriptions.

A more detailed analysis of the individual words revealed that the smaller number of behavioral examples supplied by the Aschematics was primarily the result of these subjects producing fewer examples for the four negatively rated adjectives. It is interesting in this respect that for the Aschematics there was a substantial relationship between the percentage of individuals judging a word as self-descriptive and the positivity of the word ( $r = .53$ ,  $p < .05$ ). This relationship was not evident for the other two groups of subjects (Dependents,  $r = .11$ ; Independents,  $r = .21$ ). As a group, then, the Aschematics appear to be relatively more affected by the positivity of the adjective and may use this attribute to decide whether a particular word is self-descriptive. Independent and Dependent subjects are relatively more willing to use negative labels for their behavior. It may be that an individual with a schema about her behavior on a particular dimension is aware of both the positive and negative aspects of it and has evidence for both.

This task employed 14 of the same adjectives used in Task 1 and thus it is possible to evaluate the consistency of self-descriptive responses for the three groups of subjects. For the Independents, the correlation between *me* responses on the two tasks was .64 ( $p < .01$ ), for the Dependents .56 ( $p < .05$ ), and for the Aschematics it was .20. Of the 14 adjectives employed in this task, independent subjects exhibited the shortest processing time for the words *independent*, *self-confident*, and *cooperative* in Task 1. In the present task, these were the 3 words that were most likely to be judged self-descriptive by Independent subjects, and in addition, these were the 3 words that elicited the largest number of behavioral descriptions. Dependent subjects responded fastest to the adjectives

<sup>6</sup> One-tailed test of the hypothesis that individuals with schemata are able to provide more specific behavioral evidence for their self-judgments than Aschematics.

*cooperative, cautious, and moderate* in Task 1. Again, in this task these were the words that were the most likely to be judged self-descriptive by the Dependent subjects and also the words for which they gave the greatest number of behavioral descriptions. This pattern, however, was not found for the Aschematic subjects; the adjectives requiring the least processing times were not those most likely to be judged self-descriptive. The lack of congruence between these two judgments suggests either that Aschematics were fluctuating from Task 1 to Task 2 on which adjectives they considered to be self-descriptive or that different types of considerations were mediating the two judgments. For the Independents and the Dependents, the two judgments appear to be mediated by a similar type of consideration, presumably whether or not they have previously characterized or labeled their own behavior in this way.

*Task 3: Predicting the likelihood of behavior.* In this task, it was expected that people with self-schemata on the independence-dependence dimension would assign either relatively higher or lower probabilities to independent and dependent behaviors than individuals who do not have a self-schema on this dimension of behavior. It was assumed that subjects with self-schemata would be relatively more aware or more certain of what behaviors would be elicited from them in these situations and could make more confident predictions of their behavior.

Dependent subjects assigned a significantly higher likelihood to dependent behaviors than to independent behaviors,  $t(15) = 3.30$ ,  $p < .01$ . In contrast, Independent subjects assigned a reliably higher likelihood to independent behaviors than they did to dependent behaviors,  $t(15) = 3.31$ ,  $p < .01$ . For the Aschematics, however, there was no difference between the likelihood assigned to independent behaviors and the likelihood assigned dependent behaviors,  $t(15) < 1$ .

It was evident that the Independent and the Dependent subjects differ in the actions they think likely of themselves, although some items were better than others in differentiating among the groups. The average subjective likelihood assigned to the dependent behaviors was 35.7 for Independent subjects, 45.9 for

the Aschematic subjects, and 54.4 for Dependent subjects,  $F(2, 45) = 5.57$ ,  $p < .01$ . The average likelihood assigned to the independent behaviors was 53.8 for Independent subjects, 45.7 for Aschematic subjects, and 37.1 for Dependent subjects,  $F(2, 45) = 7.40$ ,  $p < .001$ .

Overall, the Independent and the Dependent subjects differ markedly from the Aschematic subjects. The former two groups are relatively polarized in their estimations of the probabilities of these behaviors occurring, indicating that they are more certain about what types of behavior might be characteristic of them in particular settings. For the independent behaviors, the average deviation from the mean likelihood rating was 7.60 for Independents, and  $-9.12$  for Dependents. For the dependent behaviors the average deviation from the mean likelihood was  $-9.63$  for the Independents and 8.99 for the Dependents. Aschematics, however, do not show this polarization in their judgments. For the independent behaviors their average deviation was .45, for dependent behaviors it was  $-.05$ . For these individuals there appears to be little difference in the subjective likelihood of independent and dependent behaviors; they are equally likely to occur or not to occur. Recall again in this respect that the subjects were constrained to think of a fairly specific context. These data suggest, therefore, that the Aschematics have no articulated cognitive generalizations or self-schemata along the dimension of independence-dependence.

One possible alternative explanation for the lack of difference in the mean ratings of independent and dependent behaviors for Aschematics is that Aschematics are really a heterogeneous collection composed of approximately equal numbers of subjects responding like Independents and Dependents. However, inspection of the distributions of likelihood ratings yielded no evidence to support this possibility. The distributions of likelihood ratings for all three groups of subjects with respect to both independent and dependent behaviors are unimodal and fairly symmetric about the mean.

The consistent pattern of responses observed for the Independents and Dependents across these diverse tasks argues for the exist-

ence of a prevailing self-schema which facilitates the processing of social information. Individuals assumed to have schemata clearly performed differently on these tasks than did individuals assumed not to have schemata.

Aschematics did not discriminate among the independent and dependent stimuli on any of the tasks. It seems that for these individuals, independence-dependence was not a meaningful dimension of behavior; that is, they did not categorize or make distinctions on the basis of the independence or dependence of their actions.

The pattern of findings describing the Aschematics clearly indicates why self-characterizations such as adjective self-descriptions may often be misleading as indicators of future behavior. For those individuals who had a self-schema about their independence or dependence, the responses to the self-categorization task were highly consistent with their responses to the other two tasks and would most likely be consistent with behavior along this dimension. The responses of the Aschematics to the self-categorization task, however, could not be generalized even to the other self-description tasks. It would be surprising, therefore, if these responses were consistent with observable behavior.

## Study 2

This study focuses on how self-schemata may produce differences in the selection and interpretation of information about the self. If self-schemata produce differences in judgments about the self, in description of past behavior, and in prediction of future behavior, it is reasonable that they should also produce differences in interpreting new information about the self. Thus, it is hypothesized that a self-schema along a particular dimension of behavior will make an individual resistant to counterschematic information about his or her behavior. This study employed the same individuals who took part in Study 1, provided them with information about themselves (a rigged score on a test of suggestibility) which was incongruent with their assumed schema, and then evaluated the impact of this information. Subjects with definite schemata should be unwilling to accept or believe the

incongruent information produced by this measure, while Aschematic subjects should find the test results relatively more credible. Following the suggestibility test and a subsequent questionnaire, content and latencies of self-descriptions (Task 1 from Study 1) were again assessed.

## Method

### Subjects

Forty-seven of the 48 subjects who participated in Experiment 1 also participated in this experiment.

### Materials and Procedures

Three weeks after completion of the laboratory session in Study 1, subjects were scheduled for a second experiment. They were given the QPAT Suggestibility Test, a fictitious test prepared especially so that the experimenter could provide feedback that was incongruent with the subject's self-schema. Independents were given information that stated they were not independent at all but rather very suggestible and good followers. Dependents were given information indicating that they were very independent and not at all suggestible. The Aschematics were randomly assigned to one feedback condition or another.

Upon arriving at the laboratory, subjects were told:

Before beginning today's experiment, I wonder if you would like to take part in a Psychology Department project. They are in the process of validating a new test . . . that involves measuring physiological changes by attaching these [electrodes] to your fingers.

After subjects agreed to take part, electrodes were attached to two of their fingers. Standard galvanic skin response apparatus was in clear view. Subjects were then given the QPAT Suggestibility Test. In this task subjects were asked to relax and then to perform a number of simple movements such as standing up and squeezing hands together. In addition, they were asked to imagine a number of specific scenes and were asked questions about these images. The test took about 10 minutes. The experimenter then removed the electrodes and ostensibly calculated the subject's score. The subject was told:

This is a test of suggestibility in everyday life. It has been found to be a quick and reasonably accurate way to measure suggestibility. Your physiological data, the responses you made, as well as the time it took you to answer, indicate that you are highly suggestible (not at all suggestible). . . . This sheet will tell you what this score means.

Subjects were then handed one of the two descriptions, depending on their experimental condition. Independents and the Aschematics assigned to this condition were given the following description:

For individuals who score 55-65: Individuals who receive a score in this range are generally quite susceptible to social influence. They are quite likely to be influenced by others. Because they are open-minded and receptive to the suggestions of others . . . they are generally good team members. . . . Individuals in this range are not usually concerned with making their own point or standing up for a particular issue . . . This score also suggests that one is quite sensitive and able to see things from the other person's point of view.

Dependents and the Aschematics assigned to this condition were given a description that was very similar in form, but written to describe an individual who is not suggestible and not likely to be influenced by the ideas of others.<sup>7</sup>

None of the words used in these descriptions were the same as words used in any of the tasks in Study 1, although suggestibility is clearly related to the general independence-dependence dimension. After subjects finished reading their description, acceptance of the incongruent information was assessed by means of a brief questionnaire. Following the completion of this questionnaire, subjects were asked to put their questionnaire in a campus mail envelope addressed to the Psychology Department and were given a name and number to call in case they wanted to find out more about the tests.

Following this procedure, subjects were told that the experiment they were called for would begin. Subjects were given Task 1 (content and latency of self-description) from Study 1 again. The task was identical using the same 69 adjectives and requiring a subject to respond either *me* or *not me*. Each subject was randomly assigned to one of the four orders of presentation, with the exception that no subject received the same order she received in Study 1.

### Results

In the analysis of these results individuals assumed to have schemata on the independence-dependence dimension were compared with individuals assumed not to have schemata on this dimension.

**Suggestibility test.** Reactions to the suggestibility test support the expectation that individuals with schemata are less willing than Aschematics to accept incongruent or counter-schematic information as self-diagnostic. When asked, "How accurately does this test describe you?" Aschematics felt that the suggestibility test described them more accurately than did the other two groups of subjects,

$t(45) = 2.11, p < .05$ . In addition, a larger proportion of Independents and Dependents indicated some disagreement or disbelief about their score than did Aschematics,  $t(45) = 2.11, p < .05$ . More of the Aschematics were also willing to take the test again, although this difference was not reliable.

The degree to which subjects accepted test feedback is indicated by how distant from the neutral point of the 11-point scale of suggestibility they placed themselves following the manipulation. The Independents and the Dependents placed themselves on the average 2.17 points away from the neutral point in the direction indicated by the suggestibility information they received. The Aschematics, however, placed themselves 2.83 points away from the neutral point in the direction indicated by the suggestibility information,  $t(45) = 1.86, p < .05$ .<sup>8</sup>

**Self-description task.** For each of the three groups, there were no significant differences between number of endorsements at time<sub>1</sub> and endorsements at time<sub>2</sub> (which immediately followed the suggestibility test) on any of the four judgments (*me*-dependent words, *not me*-dependent words, *me*-independent words, *not me*-independent words). Aschematics, however, exhibited relatively more inconsistency in their pattern of *me/not me* responses than did the Independents and Dependents. A correlation between the Kendall  $\tau_b$  for each subject at time<sub>1</sub> and time<sub>2</sub> for the pooled Independents and Dependents was

<sup>7</sup> The two descriptions were written with the intention of making the independent and the dependent feedback convey different types of information, but give equally favorable overall impressions. To test for this, the two descriptions were given to female students in several introductory psychology classes not participating in this experiment. These students were asked to rate the two descriptions for "How much would you like an individual who fits this description?" on a 7-point Like-Dislike scale. Half of the respondents received one description first and the other half received the alternative description. The Dependent, or suggestible description, received an average rating of 4.55 and the Independent, or not suggestible description, received an average rating of 4.45, a nonsignificant difference.

<sup>8</sup> One-tailed test of the hypothesis that Aschematics are relatively more accepting of the information provided by the suggestibility test.

.82 compared to .41 for the Aschematics. While the overall number of independent and dependent words that were endorsed by the Aschematics as a group did not change, there was substantially less stability in their responses over time. This type of inconsistency was also noted in the Aschematics between the two self-characterizations tasks of Study 1.

As for processing times, the pattern is very similar to that shown in Figure 1, with Dependents again responding faster to dependent words than to independent words,  $t(15) = 3.53$ ,  $p < .01$ , and Independents again responding faster to independent words than to dependent words,  $t(15) = 2.61$ ,  $p < .05$ . Aschematics again showed no differences in processing times between the two types of judgments. Subjects with schemata (Independents and Dependents) however, showed significantly longer average latencies for these self-judgments on this second task than on the first,  $t(31) = 2.05$ ,  $p < .05$ . The Aschematics, however, did not evidence longer processing times for these judgments on the second task,  $t(15) < 1$ .

The longer response latencies at time<sub>2</sub> for the self-judgments of individuals with schemata may have been the result of these subjects trying to be consistent from time<sub>1</sub> to time<sub>2</sub>. This, however, should also have been the case for the control adjectives, the creativity/noncreativity words, but these judgments did not evidence longer latencies in the second self-categorization task; in fact, they generally became shorter. It appears, then, that the longer processing times for the independent/dependent words may well have been due to the counterschematic information provided by the suggestibility test. Subjects with schemata appear to realize that they have received information about themselves that does not fit with their current self-conception on this dimension. While this realization is not sufficient to warrant a change in self-characterization (and thus no change in adjective endorsement is observed), it probably caused these subjects to reflect slightly longer to check this information against their schemata before making a judgment.

Like the Independents and the Dependents, the Aschematics did not change their self-characterizations in the direction of the

feedback. However, unlike subjects with schemata, their processing times for the independent/dependent words remained unchanged following the suggestibility information. The most plausible explanation for this finding is that individuals without schemata on a particular dimension of behavior may indeed not see the relationship or the convergence among the suggestibility information and independent/dependent adjectives used in the self-description task. For Aschematics the suggestibility test score may have been just an isolated fact about a noncentral dimension. It should be recalled here that the suggestibility test feedback was carefully worded to avoid any of the words used in this self-categorization task. Thus, telling someone that she is very suggestible may not imply anything at all about whether or not she is conforming or dependent, if she does not categorize her behavior along an independence-dependence dimension. It should, and in this study did, influence her assessment of her relative suggestibility, however. Generalizations across various chunks of information about the self may only occur if individuals possess schemata relating them. Because the Aschematics did not have an integrated picture of themselves on the independence-dependence dimension, the suggestibility information was not perceived as relevant to the judgments being made. The self-judgments and latencies for these judgments were, therefore, not affected.

### General Discussion

These studies provide converging evidence for the concept of self-schemata, or cognitive generalizations about the self, which organize, summarize, and explain behavior along a particular dimension. Systematic differences were observed among the three groups of subjects in the selection and processing of information about the self. Thus, the group of individuals who thought of themselves as "independent" endorsed significantly more adjectives associated with the concept of independence than did individuals who did not characterize themselves this way. Additionally, these people required shorter processing times for *me* judgments to words concerned with independence than to other types of words, were able to

supply relatively more specific examples of independent behavior, thought they were likely to engage in future independent behavior, and were resistant to the acceptance of information that implied they were not independent. A parallel pattern of results was found with dependent stimuli for those individuals who thought of themselves as "dependent" people.

In clear contrast to the Independents and Dependents were the Aschematics who did not differ in their processing times for independent and dependent words, had relatively greater difficulty in providing behavioral evidence of independence and dependence, thought they were as likely to engage in independent as dependent behavior, and were relatively accepting of information about themselves on this dimension. Aschematics did not appear to view themselves along an independence-dependence dimension at all.

There are, of course, a number of alternative explanations for some of these findings which are taken as evidence for the self-schema concept. One of the major findings of these studies was that the group of Aschematics did not respond differentially to the independent and dependent stimuli. This lack of selectivity was interpreted as indicating that these individuals do not categorize their behavior according to its independence or dependence and that this is not a meaningful dimension for them. It could be argued, however, that these people are not really aschematic with regard to independence and dependence, but instead have a schema about themselves which encompasses elements of both independent and dependent behavior. Aschematics may simply have monitored their behavior (Snyder, 1974) on the independence-dependence dimension and have found a mixed pattern. Some of the Aschematics, for example, may have felt that they were independent from social influence but not at all aggressive or assertive. It might be argued, then, that there are no substantial differences between subjects with schemata and those without schemata in the types of cognitive structures that mediate information about the self. Both groups may simply be offering accurate reports of their behavior in the independence-dependence domain.

A number of results, however, argue against this alternative. First, if the underlying cognitive structures were equally articulated among the groups, the same consistency among the tasks should be found for the Aschematics that was found for the Independents and Dependents. Yet, considerable inconsistency was exhibited by the Aschematics between the two self-description tasks of Study 1, as well as between the self-categorization task in Study 1 and its identical counterpart in Study 2. Second, if there were no differences in the articulation and precision of the underlying cognitive structures between Schematic and Aschematic subjects, there should have been no differences in their readiness to make predictions about their future behavior in the domain of independence-dependence. All subjects would be expected, under these circumstances, to be equally polarized in the likelihood they assigned to future behaviors, even though they may have differed in the specific behaviors they considered likely. For example, a subject who monitors her past behavior and recalls that she has always been quite active in group discussions and shows no hesitation in giving advice and opinions, but generally stops short of starting an argument to defend a point, may see herself in the middle of the independence-dependence dimension. Nevertheless, this subject, when asked, should be quite ready to predict the manner of her future participation in group discussion. The present results on behavioral predictions, however, clearly indicate that Aschematics do not assign extreme likelihoods to any of the behaviors and report that they are as likely to engage in dependent as in independent behavior. It would appear, therefore, that subjects who have been categorized as Aschematics do not have clear and precise cognitive structures about the self in the domain of independence, for if they did, these structures would allow them to generate relatively unambiguous judgments about their future behavior.

There is, of course, the more remote possibility that Aschematics are individuals who are truly inconsistent in their behavior, such that one day they may be timid and shy in a discussion and the next day surly and ag-

gressive. In this case, inconsistency in self-description from one time to another might be expected if individuals think about themselves as highly variable or inconsistent in a particular domain. But one should also expect longer latencies for self-judgments, reflecting uncertainty or conflict over which trait labels are most appropriate, or at least more variance in judgments. None of these results was found, however.

The results of these studies have a number of implications for research on personality and the search for cross-situational consistency in behavior. It seems likely that those individuals who have schemata about themselves on a particular behavioral dimension are those most likely to display a correspondence between self-description and behavior and to exhibit cross-situational consistency on that dimension. In contrast, those individuals who have no clear schema about themselves are unlikely to exhibit such consistency in behavior. For example, Bem and Allen (1974) were able to identify a group of individuals who displayed substantial cross-situational consistency in behavior. Individuals who identified themselves as consistent on a particular trait dimension (claiming that they did not vary on this dimension across situations) exhibited substantial correspondence between self-description and behavior and were also cross-situationally consistent in their behavior. The subjects in Bem and Allen's studies who claimed they were consistent on a particular dimension may have been acknowledging a self-schema on this dimension. And the cross-situational consistency that was subsequently noted for these consistent individuals may have resulted from these individuals engaging in behavior that was motivated from a desire to be consistent with their self-schemata. Differences in the ways individuals generalize and interpret their own behavior may thus be a significant source of individual differences, and such differences may actually predict differential behavior.

These studies give empirical substance to the idea that not all people have a subjective position on every dimension of behavior. It is entirely possible that systematic effects in social behavior depend less on people having some amount of a particular substantive at-

tribute, such as independence or dependence, and more on the readiness or ability to categorize behavior along certain dimensions. This, of course, was the notion behind Kelly's (1955) methodology of allowing the individual to generate his own constructs for categorizing himself and the social environment and is pertinent to Bem and Allen's (1974) call for an idiographic approach to personality. If the dimensions under study are not the ones an individual characteristically attends to, he cannot be expected to make corresponding conceptual and behavioral discriminations along that dimension.

The concept of self-schemata that function as selective mechanisms resulting in differential attention and processing of information about the self also has implications for self-perception and attribution theory. In the study of social attribution, there are a number of well-known studies (e.g., Davison & Valins, 1969; Schachter & Wheeler, 1962; Valins & Ray, 1967; Weick, 1967; Zimbardo, 1969) that reveal behavior changes in the absence of subsequent change in self-categorizations (how one says he thinks, feels, or is). These studies are discrepant with the model of self-attribution that assumes that inferences about internal states, dispositions, or attitudes follow from behavior and thus have been something of a puzzle for attribution theorists. Valins and Ray (1967), for example, gave snake phobic subjects false feedback about their fear of snakes. These subjects were able to approach a snake more closely than controls without false feedback. They did not, however, report themselves as any less fearful as a result of their experience. In view of the present results, this finding is perhaps not surprising. A correspondence between self-categorization and overt behavior depends on the mediating self-schemata. For example, snake phobic individuals probably have a fairly well-articulated self-schema about how they feel toward snakes. The elements of this generalization include cognitive representations of specific encounters with snakes and the subsequent evaluation of these encounters. If such an individual is induced to handle snakes, it does not follow that he will immediately perceive himself as no longer afraid of snakes. This type of dispositional attribu-

tions would be (a) based on only one isolated experience and (b) contradict a well-established schema. However, individuals with no particular generalizations about their attitudes towards snakes may readily interpret their positive experience with a snake as unambiguously self-diagnostic—as indicative that they don't mind snakes and are not afraid of them. If this argument is correct, it implies that individuals will use information about their own behavior to make an inference about their own internal state, disposition, or attitude only when the behavior appears to the individual to be related to the self-characterization to be made and when it does not run counter to a prevailing generalization about the self. Within an attribution theory framework, self-schemata can be viewed as implicit theories used by individuals to make sense of their own past behavior and to direct the course of future behavior. And a given chunk of behavioral information has decidedly different self-attribution consequences for an individual with an implicit theory or self-schema than it does for one without such a schema.

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