attitude change. In A. G. Greenwald, T. C. Brock, & T. M. Ostrom (Eds.), *Psychological foundations of attitudes* (pp. 147-170). New York: Academic Press.

Healy, A. F., & Kubovy, M. (1978). The effects of payoffs and prior probabilities on indices of performance and cutoff location in recognition memory. *Memory and Cognition, 6,* 544-553.

Johnson, M. K., & Raye, C. L. (1981). Reality monitoring. *Psychological Review, 88,* 67-85.

Johnson, M. K., Raye, C. L., & Durso, F. T. (1980). Reality monitoring: Second perceptions and thoughts. *Bulletin of the Psychonomic Society, 15,* 402-404.

Johnson, M. K., Raye, C. L., Foley, H. J., & Foley, M. A. (1981). Cognitive operations and decision bias in reality monitoring. *American Journal of Psychology, 94,* 37-64.

Jolly, E. J., & Reardon, R. (1985). Cognitive differentiation, automaticity, and interruptions of automatized behaviors. *Personality and Social Psychology Bulletin, 11,* 301-314.

Lingle, J. H., & Ostrom, T. M. (1979). Retrieval selectivity in memory-based person judgments. *Journal of Personality and Social Psychology, 37,* 180-194.

Lingle, J. H., Geva, N., Ostrom, T. M., Leippe, M. R., & Baumgardner, M. H. (1979). Thematic effects of person judgments on impression organization. *Journal of Personality and Social Psychology, 37,* 674-687.

Markus, H., Smith, J., & Moreland, R. L. (1985). Role of the self-concept in the perception of others. *Journal of Personality and Social Psychology, 49,* 1494-1512.

McElroy, L. A., & Slamecka, N. J. (1982). Memorial consequences of generating non-words: Implications for semantic-memory interpretations of the generation effect. *Journal of Verbal Learning and Verbal Behavior, 21,* 249-259.

Nairne, J. S., Pusen, C., & Widner, R. L. (1985). Representation in the mental lexicon: Implications for theories of the generation effect. *Memory and Cognition, 13,* 183-191.

Slamecka, N. J., & Fevreiski, J. (1983). The generation effect when generation fails. *Journal of Verbal Learning and Verbal Behavior, 22,* 153-163.

Slamecka, N. J., & Graf, P. (1978). The generation effect: Delineation of a phenomenon. *Journal of Experimental Psychology: Human Learning and Memory, 4,* 592-604.

Smith, E. E., Adams, N., & Schorr, D. (1978). Fact retrieval and the paradox of interference. *Cognitive Psychology, 10,* 438-474.

Swets, J. A., Tanner, W. P., & Birdsall, T. G. (1961). Decision processing in perception. *Psychological Review, 68,* 301-340.

THE ROLE OF SELF-SCHEMAS IN GOING BEYOND THE INFORMATION GIVEN

RICHARD CATRAMBONE AND HAZEL MARKUS
University of Michigan

We examined the effects of self-schemas on the evaluation and memory of another person's behaviors and on prediction and inference about this person. Tasks that required the perceiver to use information that was directly accessible from the target other did not show performance differences between independent schematics (individuals rating themselves very high in the target domain, independence) and aschematics (individuals who did not so rate themselves). However, tasks that required some inference or conjecture did show large differences. This suggests that the self-concept systematically influences social cognition in situations where the perceiver has to go beyond the information given.

The self-concept has been accorded an important role in all aspects of person perception. It is thought to be influential in forming impressions of others, in remembering their behavior, and in attributing causality (Catrambone & Druian, 1986; Druian, DeBono, & Catrambone, 1983; Greenwald, 1982; Higgins, King, & Mavin, 1982; Hirschberg & Jennings, 1980; Lewicki, 1983; Markus, Smith, & Moreland, 1985). In a recent study, Markus et al. (1985) conclude that the self-concept may "influence the entire person perception process including the perception and organization of the behavior of others, the memory for and inferences about the behavior, and the evaluation of it" (p. 1510).

In the present research, we have viewed the "self-concept" as including a set of self-schemas that have connections in memory. A

"self-schema" is defined as a "cognitive generalization about the self, derived from past experience, that organizes and guides the processing of self-related information contained in the individual's social experiences" (Markus, 1977, p. 64). If, when perceiving another, some aspect of the person is relevant to a domain of one of the perceiver's self-schemas, then this schema will become active in the subsequent social information processing.

Consider the female college student who thinks of independence as a very important feature of her overall self-definition and who is talking with another woman about the possibility of sharing an apartment. If the potential roommate mentions that she will almost never be in the apartment on weekends because she regularly goes home to be with her family, the student's self-schema for independence will begin to guide the course of her thinking about this person—influencing evaluations, attributions, and predictions.

A number of studies indicate that self-schemas are indeed invoked quite naturally in the course of perceiving others and function as benchmarks in our perception of others (Fong & Markus, 1982; Kernis, 1984; Lewicki, 1983, 1984; Markus & Smith, 1981; O'Mahony, 1984). The question of the current study, then, was not whether the self can have a systematic influence in social perception, but rather under what circumstances this influence will be strongest.

THE SELF-CONCEPT: HOW PERVASIVE IS THE IMPACT?

A detailed review of studies concerned with the influence of the self-concept on social cognition suggests that self-schemas have a much more pervasive impact on some aspects of person perception than on others. Specifically, when perceivers are asked to make sense of another's behavior or to make inferences about it, the effects of the self-structure are quite evident. Unless instructed otherwise, those who are invested in a given domain of social behavior are quite confident in making a variety of evaluations and generalizations about others in this domain (Fong & Markus, 1982; Markus et al., 1985; Taylor & Crocker, 1981). However, the effects of self-schemas on ratings and recall of the target's behavior in this domain are much less pronounced or systematic (cf. Higgins et al., 1982; Markus et al., 1985). Those with schemas are relatively more confident about what they recall of another's behavior, but they do not necessarily remember a greater quantity or a greater diversity of information about the other. The effects of self-schemas on specific trait ratings of others also present an unclear picture. Those with self-schemas sometimes give

more extreme ratings of the target, but not invariably (Linville & Jones, 1980; Markus & Smith, 1981; Tesser & Leone, 1977; Tunnell, 1981; see Fiske & Taylor, 1984; Markus & Zajonc, 1985; and Stephan, 1985, for reviews of this literature).

The purpose of the present paper is to describe a single experiment evaluating the effects of self-schemas on the evaluation and memory of another person's behaviors and on prediction and inference about this person. The precise conclusion about the impact of the self-concept on person perception is likely to be a direct function of how much information can be readily obtained from the stimulus itself. We argue that the effects of the self-concept are most apparent in those tasks in which the perceiver can readily contribute to the final perceptual product.

Markus et al. (1985) have suggested that unless the individual is required to focus specifically on the target person's behavior, the perceiver's own self-concept will be the cognitive structure deployed to comprehend the thoughts, feelings, and behaviors of others. The role of the self-concept will be especially evident if one is very involved with and/or has a lot of knowledge about the domain or attributes in question. Developing this idea, we suggest here that those person perception tasks requiring or encouraging the perceiver to make use of specific information that is accessible from the target's behavior, such as immediate ratings of the target following some action or the immediate recall of these actions, focus the perceiver on specific instances of the target's behavior. As a result, in these person perception tasks, the perceiver will be less likely to use the self-structure. Ratings and recall in this case are expected to be fairly faithful functions of the target's behavior.

In contrast, those tasks calling for a free description of the target, or requiring an inference such as an attribution about the target's behavior or a prediction about behavior, are more likely to reveal the influence of the perceiver's self-concept. These are tasks that ask the perceiver to do more than retain the information communicated by the target; they require conjecture based on the perceiver's store of the target; they require conjecture based on the perceiver's store of social knowledge. If the perceiver does not have a large store of social knowledge in the domain in question, then the self-concept will not have much of an impact, since it will be unlikely to be accessed. However, for perceivers who are knowledgeable and invested in the domain, the self-concept will strongly influence information processing.

All cognitive tasks involve some amount of inference, yet there is much variation in how much inference they require. Self-schemas are unlikely to have a major impact on "the information given"; that is,

they are unlikely to distort grossly either the initial perception and organization of stimuli or retrieval from memory. Tasks that require immediate recall about a person or a specific evaluation are likely to focus the perceiver on the stimulus—on the person. Inferences and impressions, however, are much less constrained by the stimulus person. These tasks encourage or require perceivers to make their own contributions to the meaning of the stimulus. The self-concept can thus exert considerable influence when the perceiver is called upon to go "beyond the information given." It provides a rich and ready store of facts and theories about how one very important person functions, and thus it is an obvious source of information for making judgments of others.

In the present study, individuals with self-schemas for independence (we refer to these people here as "schematics") and individuals without these schemas for independence (we refer to these people as "aschematics") were compared for their performance on a number of person perception tasks. On a task that primarily requires a retention of the stimulus, relatively little difference was expected in the performance of schematics and aschematics. However, on a task requiring the perceiver to go *beyond* the information given, the two groups were expected to perform differently, because the schematics would have a dense, well-elaborated base of knowledge about their own independence on which to draw in making these inferences and impressions. In fact, we felt that it might be nearly impossible for the schematics not to allow this self-relevant information to intrude into their understanding and inferences about another. Those without self-schemas for the domain in question, the aschematics, would not have this elaborate base of self-relevant information to draw upon and would have to work with much less information—primarily information that could be gleaned on the basis of the interaction with the target person.

OVERVIEW

In this study, we explored the role of the self-concept in person perception by arranging a situation in which two people interacted in a plausible situation. We chose subjects with independence schemas (schematics) and subjects without independence schemas (aschematics) to interact with a confederate in a setting that would allow the confederate to portray herself as either an independent or a dependent person. More specifically, we had each subject and the confederate answer aloud items from a questionnaire that was ostensibly being

developed for use in another study. The confederate gave answers that portrayed her as being independent in one condition or dependent in another condition.

For dependent measures, we employed two types of tasks. One type we labeled "factual tasks." To complete these tasks, the perceiver needed primarily to retain the information given by the other person (our confederate). One task required a direct rating of the target person's independence or dependence, and another required specific recall of this person's answers to items from the questionnaire. The information necessary for both of these tasks was supplied by the stimulus person. The second type of task we labeled "conjectural tasks." They required the perceiver to go well beyond a simple retention of the information that was provided by the other person. One task asked for a general impression of the target person, and another required predictions of this person's behavior in a variety of situations. We assumed that because of their own involvement with the domain of independence, schematics should have a ready-made store of knowledge on which to draw when forming impressions and making predictions about the confederate. Aschematics should not have this store of knowledge accessible to them and thus we predicted a difference in the performance of the schematics and the aschematics on the conjectural tasks. On the factual tasks, however, we did not expect to observe a difference in the performance of the two groups of subjects, because these tasks only required that subjects focus on the information conveyed in the course of the interaction. Thus, if (as instructed) both groups of subjects attended equally carefully to the confederate's answers during the questionnaire phase, their performance should be similar.

METHOD

SUBJECTS

A standard procedure was used to identify subjects who were schematic or aschematic for the domain of independence (see Markus, 1977). Students in introductory psychology classes were given prescreening questionnaires that contained a number of self-rating scales. Three of the scale items were relevant to independent characterizations ("independent," "individualist," "leader"). Three of the scale items were relevant to dependent characterizations ("dependent," "conformist," "follower"). The remaining scale items were words not directly related to independence. Subjects were asked to

rate how self-descriptive each of these traits were using an 11-point scale (1 = "not at all"; 11 = "extremely"). For each of these traits, subjects were also asked to indicate how important it was to their overall self-evaluation, again using an 11-point scale (1 = "not at all"; 11 = "extremely"). On the basis of their responses to this questionnaire, 86 female students were selected for participation. From these individuals, two groups of subjects were identified. The first group, the "independent schematics" (n = 44), consisted of individuals who rated themselves extremely high (scale points 9-11) on at least two out of the three independent characteristics; who indicated that two of the three characteristics were important to their self-evaluation (scale points 9-11); and who rated themselves extremely low (scale points 1-3) on at least two out of the three dependent characteristics. The second group, the "aschematics" (n = 42), comprised individuals who rated themselves moderately (scale points 4-7) on two out of three independent characteristics and two out of three dependent characteristics, and who rated two out of three independent characteristics and two out of three dependent characteristics as fairly unimportant (scale points 1-6).

Approximately 6 weeks after the prescreening questionnaire was administered, the subjects were called individually to the laboratory, where they interacted with a female confederate and then completed a number of tasks to be described below. They were not informed of the connection between the laboratory session and the prescreening questionnaire.

MATERIALS AND PROCEDURE

The laboratory session included several tasks designed to assess the influence of self-schemas on processing information about others in schema-relevant domains. The tasks were divided into two groups: "factual tasks" and "conjectural tasks."

Questionnaire Session with Confederate

Initially, the subject and confederate waited outside a room and were met by one of the experiments who explained the ostensible purpose of the study. He told them the following:

> We are gathering information that will be used to help construct a "student life and attitudes questionnaire." We would like to ask each of you a series of questions that we are thinking of using on the questionnaire. You will both be answering different questions. Please try to answer the

> questions briefly, in a sentence or two, but your answers should reflect your feelings as accurately as possible. Please pay attention to the answers to all the questions because we will be needing more information later.

These instructions were designed to encourage subjects to listen to the answers of the confederate. The subject was always asked her 10 questions first, and the confederate paid close attention to the subject in order to encourage the subject to listen closely to the confederate when she gave her answers. The confederate was always asked the same 10 questions, regardless of whether she played an independent or a dependent role. For example, one question was "How often do you see your family?" The independent answer was "I enjoy seeing my family, but I guess I don't make it home that often, even though they're only an hour away." The dependent answer was "I go home pretty often to be with my family, especially since they are only an hour away." These answers were designed to be "independent-sounding" or "dependent-sounding" and were pilot-tested to insure that they were perceived this way. For a given subject, the confederate played an independent or a dependent role for all 10 questions. Thus the design was a 2 (independent schematic vs. aschematic subject) × 2 (independent vs. dependent confederate) design.

Preliminary Ratings

After the questionnaire session was completed, the subject (and ostensibly the confederate) went to a room containing several booths and an additional experimenter. Each booth had a monitor that was connected to a microcomputer in another part of the room. The subject was told that the experimenter wished to get some additional information from her concerning the phase of the project she had just completed.

As a check on the subjects' initial self-ratings (from 6 weeks earlier), subjects rated themselves on 70 attributes using a 7-point scale (1 = "not very descriptive"; 7 = "very descriptive"). The attributes were related to a variety of dimensions, including independence, creativity, physical attractiveness, maturity, and social concern. Half of the subjects did these ratings before doing the adjective rating, statement recall, and behavioral prediction tasks concerning the confederate (see below). The other half of the subjects made their self-ratings after these tasks.

Another task required each subject to indicate how similar she was to the confederate on a 7-point scale (1 = "quite dissimilar"; 7 = "quite similar") for 17 dimensions (e.g., independence, generosity,

social concern). One of the questions simply asked how similar the subject and the confederate were in general.[1] The remainder of the tasks are described below and are divided into factual and conjectural tasks.

Factual Tasks

1. *Adjective rating*. Subjects completed a 70-item adjective checklist with respect to the confederate. The adjectives were the same ones used in the self-ratings.

2. *Recall*. Each subject recalled the answers the confederate gave to the questions she was asked during the questionnaire phase. The monitor displayed the questions one at a time, and the subject was asked to write down as accurately as possible what she remembered the confederate answering. The order of the questions was randomized for each subject in order to decrease the likelihood of questions cueing each other. Subjects also gave a confidence rating on a 10-point scale of their recall accuracy (1 = "not very confident"; 10 = "very confident") for each question. After a subject wrote her answer for a particular question, she pressed a button that caused the screen to become momentarily blank and then to display the next question.

Conjectural Tasks

1. *Behavior prediction*. Subjects read four stories, each typed on a separate piece of paper. The stories were taken from Ross, Greene, and House (1977). Each story described a scenario and then asked the subject how likely it was (on a scale from 0% to 100%) that the confederate would respond in a specified way (e.g., "What is the likelihood [from 0% to 100%] that the person with whom you were answering the items from the questionnaire would vote for group papers?"). It also asked her to indicate her confidence on a 10-point scale (1 = "not very confident"; 10 = "very confident") in her prediction. The subject answered these questions for a particular story before reading the next story. The order of the stories was randomized for each subject. Three of the stories were relevant to the domain of independence, while a fourth served as a control. The stories are presented in the Appendix.

2. *Card sorting (impression formation)*. Each subject was given 25 index cards and was asked to write down her "impressions and recol-

---

1. For half of the subjects, this was the first similarity judgment question asked. For the rest of the subjects, it was the last. This factor made no difference in the analyses and is not discussed further.

lections" about the confederate. She was told to write down one item or idea per card, and was also told that it was up to her to decide what constituted an idea or item. Subjects were told to use as many or few cards as they needed (they could ask for more), although they would not be allowed to work at the task for more than 10 minutes. When each subject finished, she was asked to sort the cards into piles based on similarity.

Debriefing

In the last phase of the experiment, subjects were debriefed. Subjects were asked whether or not they had suspected the goals of the experiment or whether they had not believed the confederate to be a true subject. Only six subjects reported having any suspicions, and all six said they had not really thought about it until the experimenter had asked them. It was decided to include these subjects in the analyses.

RESULTS

SUBJECT SELF-RATING CHECK

The timing of the self-ratings (before or after the rating and judgment tasks with respect to the confederate) did not influence the performance on any of the dependent measures for either independent schematic or aschematic subjects. Thus, this factor is not discussed further. An average self-descriptiveness rating for the independence-related adjectives was calculated for each subject. Subjects who were classified as independent on our prescreening questionnaire rated themselves as more independent than aschematic subjects ($M = 4.69$ for independent schematics vs. $M = 3.85$ for aschematics), $F (1, 82) = 33.78$, $p < .0001$. This suggests that the initial questionnaire was successful in identifying independent schematic and aschematic people.

FACTUAL TASKS

The subjects performed two factual tasks. In the first task, both schematics and aschematics gave similar ratings for the confederate. Both gave higher independence ratings for the independent confederate, $F (1, 82) = 111.11$, $p < .0001$ (see Figure 1), and both groups gave higher dependence ratings for the dependent confederate, $F (1, 82) = 99.73$, $p < .0001$ (see Figure 1). These results indicate that the subjects
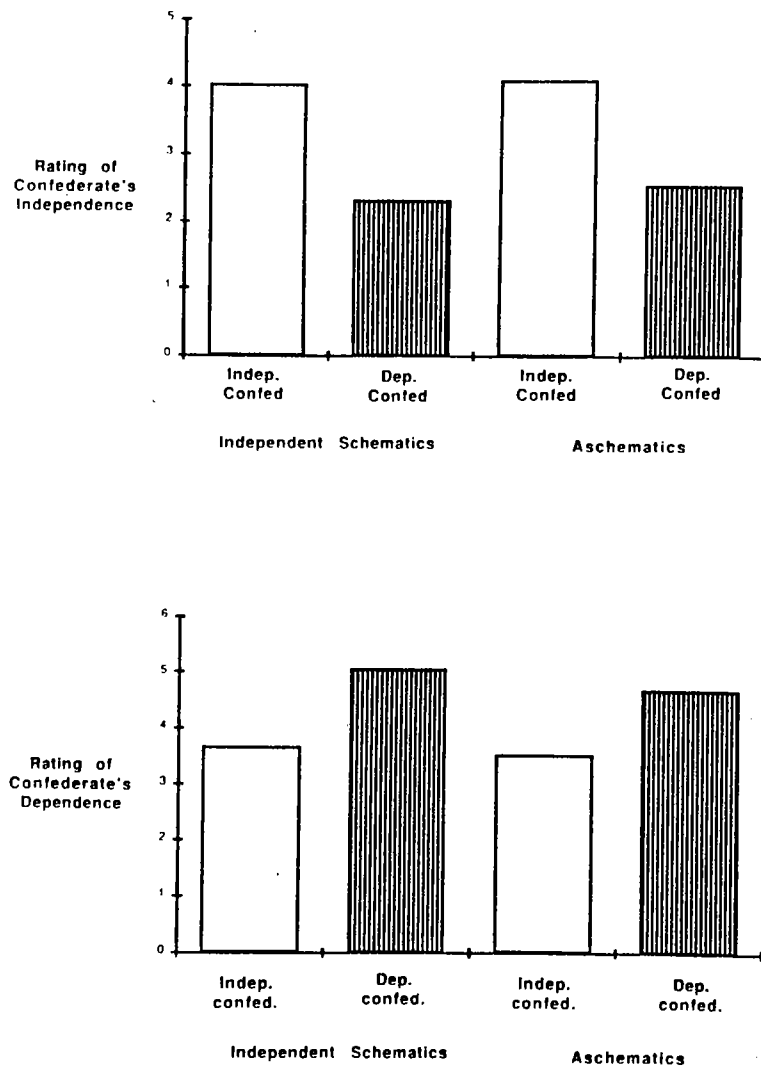
FIGURE 1
Subjects' independence and dependence ratings of the confederate as a function of
confederate type and subject type.

were retaining the information conveyed by the target and that the manipulation was successful; when giving independent answers, the confederate was perceived as independent, and when giving dependent answers, she was perceived as dependent.

In the second factual task, subjects had to recall the confederate's answers from the questionnaire session. Four judges independently scored subjects' performance, and a fifth judge resolved all disagreements. A judge gave each recalled answer a yes-no rating to indicate whether the statement was recalled with at least a minimum level of accuracy and completeness. If a statement was recalled, the accuracy and completeness was scored on a 3-point scale (1="little recall"; 2="some recall"; 3="high recall"). The mean number of statements recalled suggested that schematicity does not strongly influence information processing for recall, at least not over this over short period of time. That is, there was no effect of subject type, confederate type, or a subject type × confederate type interaction on the number of confederate statements recalled (M's=8.77 and 8.73 for schematics with independent and dependent confederates, respectively, vs. 8.13 and 8.79 for aschematics; all p's<.19). Given that a statement was recalled, there was an effect of confederate type for the accuracy and completeness of the recall for that statement (M's=1.81 and 2.07 for schematics with independent and dependent confederates, respectively, vs. 1.92 and 2.05 for aschematics), F (1, 82)=10.11, $p<.0025$; this indicates that the dependent statements were somewhat more memorable than the independent statements. The groups did not differ in their confidence for their recall of the confederate's statements (M's=6.84 and 6.89 for schematics with independent and dependent confederates, respectively, vs. 7.00 and 6.58 for aschematics; $p<.35$ for the interaction).

CONJECTURAL TASKS

In contrast to the factual tasks, independent schematic and aschematic subjects performed quite differently in the conjectural tasks. In the behavior prediction task, subjects read four brief scenarios (three relevant to independence-dependence and one a control) and were asked to indicate the likelihood (on a scale of 0% to 100%) of the confederate's behaving in a particular way. For example, in one story, a subject was asked how likely the confederate would be to allow a film of herself shopping in a supermarket (taken with a hidden camera) to be used in a commercial for the supermarket chain. In another story, the subject was asked how likely the confederate would be

simply to mail in a fine rather than go to court over a speeding ticket she received, given that the ticket contained accurate information about the speeding but was inaccurate about things like weather, time, and the like. The results indicate that independent schematics did make a distinction among confederate types concerning the likelihood of engaging in the dependent behavior, while aschematic subjects did not, F (1, 82)=11.9, $p<.001$ for the interaction of subject type and confederate type (see Figure 2). Schematics predicted significantly more strongly that the dependent confederate would behave in a dependent fashion than did the aschematics. A control story was used to see whether schematics in general would give more extreme ratings to other people than aschematics would. For this story, there was no significant different in subjects' ratings of the likelihood of the confederate's performing the behavior described in the story (M's = 49.14 and 52.41 for schematics with independent and dependent confederates, respectively, vs. 57.17 and 52.32 for aschematics; $F<1$ for the interaction of subject type and confederate type).

In the card-sorting task, both groups wrote the same number of cards for both confederate types (M's = 11.73 and 12.82 for schematics with independent and dependent confederates, respectively, vs. 12.35 and 13.26 for aschematics; $F<1$). In a method similar to that of Markus et al. (1985), we calculated the proportion of cards that specu-

FIGURE 2

Subjects' ratings of the likelihood of the confederate's engaging in dependent behavior (averaged across the three stories) as a function of confederate type and subject type.
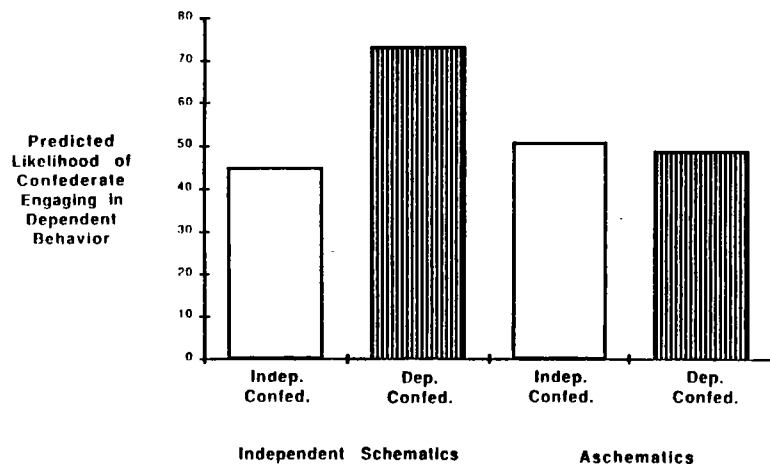
lated about traits of the confederate, as opposed to cards that simply described the behavior or appearance of the confederate. Schematics wrote a higher proportion of trait-related cards (M's = .64 and .72 for independent and dependent confederates, respectively) than did aschematics (M's = .48 and .62), F (1, 82)=5.08, $p<.03$. This suggests that schematics were better able or more willing to infer attributes or characteristics of the confederate. In addition, both groups wrote a higher proportion of trait-related cards for the dependent confederate than the independent confederate, F (1, 82)=3.48, $p<.07$.

As an indication that it may have been similarity to self that was mediating judgments in the conjectural tasks, we found that schematics gave more extreme *independence* similarity ratings of self to confederate than did aschematic subjects (see Figure 3). That is, schematics saw the independent confederate as very similar to themselves and the dependent confederate as very dissimilar. Aschematic subjects did not make as strong a distinction. This interaction of subject type and confederate type was significant, F (1, 82)=18.95, $p<.0001$. Both groups of subjects, however, gave about the same *creativity* similarity ratings to the confederate, which indicates that their ratings were quite domain-specific. Further support for the mediating role of perceived similarity in conjectural tasks was found in the significant negative correlation between independence similarity ratings and the average behavior predictions (for the three experimental stories) for the confederate made by schematics ($r = -.578$), $z = -3.88$, $p<.001$ (for the test that the correlation did not significantly differ from 0). That is, the less similar to herself a schematic saw the confederate, the greater likelihood she gave to the confederate's performing the dependent behavior in the stories. The correlation between these variables was not significantly different from 0 for aschematics ($r = -.037$).

DISCUSSION

Our goal was to examine within a single study the effects of the self-concept on two types of person perception tasks: those that primarily require the perceiver to attend to the target person and to retain the information directly conveyed or communicated by this person; and those that are less stimulus-bound, and instead require or encourage the perceiver to construct or derive conclusions that draw on other relevant information available in memory.

In this study, the confederate—the target of the person perception—conveyed specific information about her independence or dependence, and the questions asked of the subject about the confed-

erate were directly relevant to independence or dependence. Specifically, subjects were asked to rate the independence and dependence of the person with whom they interacted. Moreover, in a memory task, they were asked to recall *as accurately as possible* what was said in answer to the experimenter's questions. These two tasks were labeled the "factual tasks," and, as predicted, we did not find any differences between independent schematics and aschematics in the evaluation of or memory for the target person's responses. Such a difference would only be expected if the subjects were bringing other information—self-related information that was not provided in the experimental setting—to bear in making these responses. The absence of differences between the schematics and the aschematics suggests that all subjects could perform the tasks using just the information they retained from the interview situation.

The two "conjectural tasks" in this study encouraged the perceiver to contribute to the perceptual product. That is, they asked for impressions of the target person and for predictions about how likely the target would be to engage in behaviors that were quite different and far afield from anything discussed in the experimental setting. These conjectural tasks allowed the perceiver to bring additional knowledge to bear in making her conjectures about the target. In these tasks, in contrast to the rating of and memory for the confederate's answers, we indeed found marked differences in the response of

FIGURE 3

Subjects' ratings of their similarity to the confederate on independence dimension as a function of confederate type and subject type.

SELF-SCHEMAS IN SOCIAL COGNITION   363
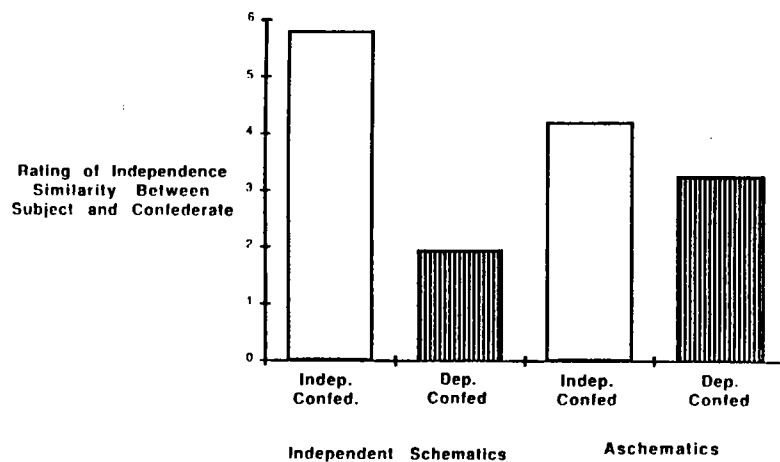
the schematics and the aschematics. The schematics presumably were quite expert with respect to independence. They were thus more willing to infer various characteristics and attributes of the target, and to take a stand about the target's likely behavior in situations for which they could have little information on which to base their judgments beyond the information about how they themselves might behave.

The present study suggests that the answer to the question of when and how the self-concept influences social perception is a complex one. The nature of the self-concept's influence depends on the perceiver's expectations, the nature of the person perception task, and the type of information that is available about the target. This study does offer, however, at least one organizing generalization: The influence of the self-concept on social cognition will be most evident in those tasks that directly encourage the perceiver to contribute to the perceptual product and to go beyond the information given. These conditions are likely to occur when the target other does not convey sufficiently complete or compelling information on which to base an impression, attribution, or prediction. In the current study, these conditions were met by the behavioral prediction task and the impression task. And indeed, from a review of a large number of studies of the effects of schemas on perception, it is evident that their influence is greatest when the perceiver is required to go beyond the information given in his or her judgments (Fiske & Taylor, 1984; Markus & Zajonc, 1985).

Under some circumstances, of course, schemas may also bias memory, but this is most likely if the presentation of the stimulus other is impoverished or if recall is delayed so that information about the stimulus other becomes less readily accessible. Schemas may also have a pervasive impact on other basic aspects of person perception, such as attention, selection, and categorization, but these effects will be most evident when the perceiver determines what should be the focus of attention or when the stimulus has not been defined or delimited for the perceiver.

This generalization about the influence of the self-concept implies that the nature of the self-concept's influence will vary according to how the other person is presented in the interaction. An actual person provides a much more vivid and powerful stimulus than a one-paragraph description of the person or even a film of the person behaving. The fewer the dimensions that are filled in by the target person during an interaction, the more "filling in" is done by the subject. Studies that find robust effects of schemas on information processing are most often those in which the target other has been presented in very impoverished terms—in a few sentences or paragraphs (Cohen, 1977; Rothbart, Evans, & Fulero, 1979; see Hastie, 1981, for a review).

These results suggest that a schema may have a marked impact on person perception even if memory for the other's behavior is unaffected. Memory for details of the target other may be startlingly good, but many evaluations and judgments of another are not solely memory-based (cf. Lingle, Geva, Ostrom, Leippe, & Baumgardner, 1979). That is, evaluations and judgments encourage the perceiver to go beyond this information. And if the area of the evaluation or judgment is one of concern or involvement for the perceiver, we will see the clear impact of the self-concept on the perception of the other.

An important question for discussion—one that cannot be addressed by the data of the current study—is whether the self-concept's influence occurs purposefully with awareness when we think about another, or whether it occurs quite automatically outside awareness. Numerous studies of the false-consensus bias, projection, and impression formation strongly suggest that the latter may often be the case (cf. Bargh & Pietromonaco, 1982).

The intrusion of self-relevant material into our impressions and inferences of others appears to happen quite naturally and without effort. Efforts to model automatic information processing in various problem-solving domains have been quite successful. Experts, those who are very familiar with a certain domain, perform many operations automatically. They appear to have developed specialized procedures for solving certain kinds of problems (cf. Card, Moran, & Newell, 1983). They do not have to engage in the slow, deliberate, step-by-step problem-solving process that characterizes the performance of novices (Anderson, 1985; Bargh, 1984; Chase & Simon, 1973; Kieras & Bovair, 1986; Larkin, McDermott, Simon, & Simon, 1980; Newell & Simon, 1972). In the current study, those with self-schemas in the domain of independence can be considered experts, while the aschematics can be viewed as novices with respect to the domain of independence.

If a person who is schematic for some domain has proceduralized his or her knowledge about how one behaves in various situations related to that domain, then it may be almost impossible for that person to avoid the immediate intrusion of the self into the perception of another when the behavior of the other is relevant to a domain that is critical for self-definition. Self-relevant assumptions become the first to be used when we form impressions of others, because they have been proceduralized and thus are accessed automatically whenever certain conditions are matched. Aschematics, of course, will not possess these procedures, and their impressions and inferences will result from integrating whatever information has been provided or can be gleaned from the target other. They may have proceduralized

knowledge for other domains, but these procedures are not likely to be activated in situations for which they are aschematic.

APPENDIX: STORIES AND QUESTIONS USED IN BEHAVIOR PREDICTION TASK[2]

SUPERMARKET STORY

As you are leaving your neighborhood supermarket, a man in a business suit asks you whether you like shopping in that store. You reply quite honestly that you do like shopping there and indicate that, in addition to being close to your home, the supermarket seems to have very good meats and produce at reasonably low prices. The man then reveals that a videotape crew has filmed your comments and asks you to sign a release allowing them to use the unedited film for a TV commercial that the supermarket chain is preparing.

What is the likelihood (from 0% to 100%) that the person with whom you were answering the items from the questionnaire would sign the release? ____

TERM PAPER STORY

You arrive for the first day of class in a course in your major area of study. The professor says that the grade in your course will depend on a paper due the final day of the course. He gives the class the option of two alternatives upon which they must vote: They can either do papers individually in the normal way, or they can work in teams of three persons who will submit a single paper among them. You are informed that he will still give out the same number of A's, B's, C's and so on, but that in the first case every student will be graded individually while in the second case all three students who work together get the same grade.

What is the likelihood (from 0% to 100%) that the person with whom you were answering the items from the questionnaire would vote for group papers? ____

2. The first three stories served as the behavioral prediction tasks with respect to independence-dependence. The fourth story was the control story. All four stories were taken from Ross et al. (1977).

TRAFFIC TICKET STORY

While driving through a rural area near your home, you are stopped by a county police officer who informs you that you have been clocked (with radar) at 38 mph in a 25-mph zone. You believe this information to be accurate. After the policeman leaves, you inspect your citation and find that the details on the summons regarding weather, visibility, time, and location of the violation are highly inaccurate. The citation informs you that you may either pay a $20 fine by mail without appearing in court, or you must appear in municipal court within the next 2 weeks to contest the charge.

What is the likelihood (from 0% to 100%) that the person with whom you were answering the items from the questionnaire would pay the $20 fine by mail? ____

SPACE PROGRAM REFERENDUM STORY

It is proposed in Congress that the space program be revived and that large sums be allocated for the manned and unmanned exploration of the moon and planets nearest Earth. Supporters of the proposal argue that it will provide jobs, spur technology, and promote national pride and unity. Opponents argue that a space program will either necessitate higher taxes, or else drain money from important domestic priorities. Furthermore, they deny that it will accomplish the desirable effects claimed by the program's supporters. Both sides, of course, refute each other's claims, and ultimately a public referendum is held.

What is the likelihood (from 0% to 100%) that the person with whom you were answering the items from the questionnaire would vote for the proposed allocation of funds for space exploration? ____

REFERENCES

Anderson, J. R. (1985). *Skill acquisition: Compilation of weak-method problem solutions* (Technical Report No. ONR-85-1). Pittsburgh: Carnegie-Mellon University.

Bargh, J. A. (1984). Automatic and unconscious processing of social information. In R. S. Wyer, Jr., & T. K. Srull (Eds.), *Handbook of social cognition* (Vol. 3, pp. 1-43). Hillsdale, NJ: Erlbaum.

Bargh, J. A., & Pietromonaco, P. (1982). Automatic information processing and social perception: The influence of trait information presented outside of conscious awareness on impression formation. *Journal of Personality and Social Psychology, 43,* 437 449.

Card, S. K., Moran, T. P., & Newell, A. (1983). *The psychology of human-computer interaction.* Hillsdale, NJ: Erlbaum.

Catrambone, R., & Druian, P. *Cognitive accessibility of the self-concept in person perception.* Paper presented at the 57th meeting of the Eastern Psychological Association, New York.

Chase, W. G., & Simon, H. A. (1973). The mind's eye in chess. In W. G. Chase (Ed.), *Visual information processing* (pp. 215-281). New York: Academic Press.

Cohen, C. E. (1977). *Cognitive basis of stereotyping.* Paper presented at the annual meeting of the American Psychological Association, San Francisco.

Druian, P., DeBono, K., & Catrambone, R. (1983). *Personality and attribution: The role of cognitive accessibility.* Paper presented at the 55th meeting of the Midwestern Psychological Association, Chicago.

Fiske, S. T., & Taylor, S. E. (1984). *Social cognition.* Reading, MA: Addison-Wesley.

Fong, G. T., & Markus, H. (1982). Self-schemas and judgments about others. *Social Cognition, 1,* 191-204.

Greenwald, A. G. (1982). Ego task analysis: An integration of research on ego-involvement and self-awareness. In A. H. Hastorf & A. M. Isen (Eds.), *Cognitive social psychology* (pp. 109-147). New York: Elsevier/North-Holland.

Hastie, R. (1981). Schematic principles in human memory. In T. E. Higgins, C. Herman, and M. P. Zanna (Eds.), *Social cognition: The Ontario Symposium on Personality and Social Psychology* (Vol. 1, pp. 39-88). Hillsdale, NJ: Erlbaum.

Higgins, E. T., King, G. A., & Mavin, G. H. (1982). Individual construct accessibility and subjective impressions and recall. *Journal of Personality and Social Psychology, 73,* 35-47.

Hirschberg, N., & Jennings, S. J. (1980). Beliefs, personality, and person perception: A theory of individual differences. *Journal of Research in Personality, 14,* 235-249.

Kernis, M. (1984). Need for uniqueness, self-schemas, and thought as a moderator of the false-consensus effect. *Journal of Experimental Social Psychology, 20,* 350-362.

Kieras, D. E., & Bovair, S. (1986). The acquisition of procedures from text: A production-system analysis of transfer of training. *Journal of Memory and Language, 25,* 507-524.

Larkin, J., McDermott, J., Simon, D. P., & Simon, H. (1980). Expert and novice performance in solving physics problems. *Science, 208,* 1335-1342.

Lewicki, P. (1983). Self-image bias in person perception. *Journal of Personality and Social Psychology, 45,* 384-393.

Lewicki, P. (1984). Self-schema and social information processing. *Journal of Personality and Social Psychology, 47,* 1177-1190.

Lingle, J. H., Geva, N., Ostrom, T. M., Leippe, M. R., & Baumgardner, M. H. (1979). Thematic effects of person judgments on impression organization. *Journal of Personality and Social Psychology, 37,* 674-687.

Linville, P. W., & Jones, E. E. (1980). Polarized appraisals of out-group members. *Journal of Personality and Social Psychology, 38,* 689-703.

Markus, H. (1977). Self-schemata and processing information about the self. *Journal of Personality and Social Psychology, 35,* 63-78.

Markus, H., & Smith, J. (1981). The influence of self-schemas on the perception of others. In N. Cantor & J. Kihlstrom (Eds.), *Personality, cognition, and social interaction* (pp. 233-260). Hillsdale, NJ: Erlbaum.

Markus, H., Smith, J., & Moreland, R. L. (1985). Role of the self-concept in the perception of others. *Journal of Personality and Social Psychology, 49,* 1494-1512.

Markus, H., & Zajonc, R. (1985). The cognitive perspective in social psychology. In G. Lindzey & E. Aronson (Eds.), *The handbook of social psychology* (3rd ed., Vol. 1, pp. 137-230). New York: Random House.

Newell, A., & Simon, H. A. (1972). *Human problem solving*. Englewood Cliffs, NJ: Prentice-Hall.

O'Mahony, J. F. (1984). Knowing others through the self: Influence of self-perception on perception of others: A review. *Current Psychological Research and Reviews*, 3(4), 48-62.

Ross, L., Greene, D., & House, P. (1977). The "false consensus effect": An egocentric bias in social perception and attribution processes. *Journal of Experimental and Social Psychology*, 13, 279-301.

Rothbart, M., Evans, M., & Fulero, S. (1979). Recall for confirming events: Memory processes and the maintenance of social stereotypes. *Journal of Experimental Social Psychology*, 15, 343-355.

Stephan, W. G. (1985). Intergroup relations. In G. Lindzey & A. Aronson (Eds.), *The handbook of social psychology* (3rd ed., Vol. 2, pp. 599-658). New York: Random House.

Taylor, S. E., & Crocker, J. (1981). Schematic bases of social information processing. In E. T. Higgins, C. A. Harman, & M. P. Zanna (Eds.), *Social cognition: The Ontario Symposium on Personality and Social Psychology* (Vol. 1, pp. 89-134). Hillsdale, NJ: Erlbaum.

Tesser, A., & Leone, C. (1977). Cognitive schemas and thought as determinants of attitude change. *Journal of Experimental Social Psychology*, 13, 340-356.

Tunnell, G. (1981). Sex roles and cognitive schemas: Person perception in feminine and androgynous women. *Journal of Personality and Social Psychology*, 40, 1126-1136.

UNCERTAINTY ORIENTATION AND PERSON PERCEPTION: INDIVIDUAL DIFFERENCES IN CATEGORIZATION

CHRISTOPHER J. R. RONEY AND RICHARD M. SORRENTINO
University of Western Ontario

Individual differences in the structure of subjects' person categories were investigated in relation to "uncertainty orientation"—a variable that is related to people's relative interest in either maximizing information gain (uncertainty-oriented people) or maintaining clarity (certainty-oriented people). Two tasks, based on research by Cantor and Mischel (1979), were completed by 133 subjects. In one, the subjects were to classify specific person categories under four general "superordinate" person category headings, and in the other, they were asked to list trait adjectives describing members of each of four specific person categories. The results extend Cantor and Mischel's research by demonstrating a "trade-off" between differentiation of categories and the richness of categories at the individual level. In addition, both studies yielded support for specific hypotheses. In the first task, certainty-oriented subjects listed fewer person categories under the higher-order superordinate category headings ($p < .001$), and demonstrated less overlap across these superordinate categories ($p < .02$) than did uncertainty-oriented subjects. Similarly, for the second task, certainty-oriented subjects listed fewer trait adjectives to describe specific person categories (suggesting less richness, $p < .05$); subsequently, fewer traits were common to more than one category for certainty-oriented subjects (suggesting greater differentiation, $p < .08$) than was true for uncertainty-oriented subjects. The significance of these findings for uncertainty orientation, and possible implications for stereotyping and information seeking, are discussed.