PERSONALITY PROCESSES AND INDIVIDUAL DIFFERENCES

Self-Consciousness and the Processing of Self- Relevant Information

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Three experiments were conducted to examine cognitive processes involved in self-conscious behavior. According to Hull and Levy (1979), self-consciousness is associated with processes involved in self-referent encoding. The present studies advance the more specific hypothesis that self-consciousness is involved with the aspect of self-reference associated with the activation of knowledge about the self. Experiment 1 used a self-reference paradigm and found that self-consciousness increased the extent to which a manipulation of accessible self-knowledge influenced self-referent encoding. Experiment 2 used a self-perception paradigm and found that self-consciousness increased the extent to which a manipulation of accessible self-knowledge affected subsequent self-perception. Experiment 3 used a correlational design to demonstrate how cognitive processes associated with self-reference may mediate self-conscious behavior. Individual differences in self-referent encoding were associated with individual differences in self-consciousness; both variables were associated with increased affective reactions to self-relevant feedback; and partitioning out individual differences in self-referent encoding eliminated the effects of self-consciousness. These results are discussed in terms of their implications for reconciling various theories of self-consciousness.

Recent research on the self has focused on the notion that self acts as a cognitive schema (e.g., Markus, 1977) or prototype (e.g., Kihlstrom & Cantor, 1984) for processing information. According to this view, self exists as

one's mental representation of oneself, no different in principle from mental representations that a person has concerning other ideas, objects, and events and their attributes and implications. In other words, the self is a concept, not unlike other concepts, that is stored in memory as a knowledge structure, not unlike other knowledge structures. (Kihlstrom & Cantor, 1984, p. 2)

To test the hypothesis that self exists as a schema or prototype, researchers have used a number of experimental paradigms originally developed by cognitive psychologists. This research has shown that information processed with reference to the self is more easily recalled than information processed according to other schemes (e.g., Bower & Gilligan, 1979; Rogers, Kuiper, & Kirker, 1977). In the typical paradigm, words rated according to whether or not they "describe you" are subsequently more likely to be recalled than words rated according to their structural (e.g., length) or semantic (e.g., meaning) characteristics. This "self-reference effect" is thought to occur because information encoded with reference to a well-organized self-schema is processed more efficiently and hence is more readily accessible for subsequent recall.

Results of studies that have used other cognitive paradigms offer additional evidence for the notion that self acts as a cognitive prototype. Thus, prototypes bias processing such that information that has not been presented but that is consistent with the prototype is more likely to be falsely reported to have been previously presented. Consistent with the notion that self acts as a cognitive prototype, the more self-relevant a stimulus, the more likely it is to be associated with such a "false alarm effect" (Rogers, Rogers, & Kuiper, 1979). In addition, information that definitely matches or does not match a prototype is rapidly processed. Information that falls in a middle ground is processed more slowly. Again, consistent with the "self as prototype" notion, increasing self-relevance is associated with just such an "inverted-U reaction time effect" (Kuiper, 1981).

Whereas this research has attempted to identify processes responsible for the self-reference effect, other research has attempted to eliminate plausible alternative explanations for the effect. According to a study by Kuiper and Rogers (1979), referring information to the self is not the same as simply referring it to a well-known person: Self-relevant encoding strategies are superior to other-relevant (e.g., best-friend-relevant, well-known-other-relevant) encoding strategies. Similarly, a study by McCaul and Maki (1984) showed that rating information according to its self-relevance involves more than simply rating its desirability. Along the same lines, Ganellen and Carver (1985) showed that rating information according to its self-relevance involves more than simply rating its desirability.

Boundary Conditions on the Self-Reference Effect

Whereas numerous studies have established the reliability and validity of the self-reference effect, fewer studies have at-
tempted to specify its boundary conditions. Extrapolating from the initial reports of the self-reference effect, Hull and Levy (1979) proposed that the state of self-awareness or self-consciousness is associated with the process of encoding information according to its self-relevance. From this perspective, individuals dispositionally high in self-consciousness differ from those low in self-consciousness in terms of their chronic tendencies to encode information as self-relevant. Similarly, situational manipulations of self-awareness act as cues that prime self-reference processes.

Several studies have provided support for the notion that self-consciousness is associated with self-referent encoding. Using the procedures developed by Rogers et al. (1977), Hull and Levy (1979) found that high, but not low, private self-conscious individuals showed the typical self-reference effect of greater incidental recall for self-relevant than non-self-relevant information. Hull, Levenson, Young, and Sher (1983) replicated this effect with sober, but not alcohol-intoxicated, subjects and suggested that alcohol reduces self-consciousness by interfering with self-referent encoding. Using the Rogers et al. (1977) paradigm, Agatstein and Buchanan (1984) showed that high private self-conscious individuals have greater memory for self-relevant information about the private self, whereas high public self-conscious individuals have greater memory for self-relevant information about the public self. Similarly, Turner (1980) reported that high private self-conscious individuals have greater memory for self-relevant trait terms than do low self-conscious individuals.

In addition to self-consciousness, a second boundary condition on the self-reference effect appears to be the extent to which the self-referent stimulus is consistent with knowledge about the self. Derry and Kuiper (1981) showed that depressives are more likely to process depressive-content information as self-relevant, whereas nondepressives are more likely to process nondepressive-content information as self-relevant (for an extended discussion see Kuiper, MacDonald, & Derry, 1983). Ingram, Smith, and Brehm (1983) found similar effects among normal subjects given failure feedback: Nondepressed subjects given failure feedback were more likely to process negative information as self-relevant than were nondepressedives given success feedback. In contrast, depressed subjects showed a consistent bias toward negative information regardless of prior success or failure feedback.

In sum, separate literatures have suggested that the self-reference effect is associated with self-consciousness and the extent to which the stimulus is consistent with existing knowledge about the self. In this article, we propose that although consistent self-knowledge and increased self-consciousness both facilitate self-referent encoding, they do so in qualitatively different ways. Our logic is as follows:

First, we assume that the encoding of a stimulus is facilitated to the extent that information consistent with the stimulus is in working memory at the time of processing (e.g., McKoon & Ratcliff, 1979). In turn, the extent to which information consistent with the stimulus is in working memory at the time of encoding is a function of (a) the extent to which the individual possesses accessible knowledge consistent with the stimulus, and (b) the extent to which such knowledge is activated from long-term storage into working memory at the time of encoding. With respect to the literature on the self-reference effect, we propose that manipulations of self-knowledge (e.g., success-failure) determine the extent to which the individual possesses specific, accessible knowledge consistent with the stimulus. On the other hand, self-consciousness influences the extent to which the general domain of self-knowledge is activated at the time of encoding. From this perspective, the effects of self-consciousness are directly dependent on the nature of the individual's self-knowledge. The variables of self-consciousness and self-knowledge should therefore interact in their influence on self-referent encoding.

Self-Consciousness and the Activation of Self-Relevant Knowledge

Our analysis of the effects of self-consciousness and self-awareness manipulations is a refinement of an earlier model presented by Hull and Levy (1979). Whereas Hull and Levy (1979) identified self-awareness with self-relevant encoding processes, we identify self-awareness with the specific aspect of self-referent encoding associated with the activation of self-knowledge. Given that this constitutes a refinement of an earlier position, a brief elaboration of the concept of activation will prove useful.

Within schema theory it is held that "the mere possession of relevant knowledge is not sufficient for it to play a role in encoding. The knowledge must be activated at the time of encoding" (Alba & Hasher, 1983, pp. 205–206). Generally speaking, activation brings knowledge out of long-term memory and into working memory. This is not an all-or-none process. Rather, activation varies continuously, and information is part of working memory to various degrees (Anderson, 1983). Situational and dispositional factors may affect the activation levels of particular pools of knowledge and hence influence the contents of working memory. In turn, the contents of working memory can function as primes to increase the activation level of associatively relevant information. In this way, activated information "guides subsequent processing and makes it more efficient" (Anderson, 1983, p. 95).

As an example of the importance of activation in cognition, consider the following sentence (from Anderson, 1983): "The robber took the money from the bank." In English there are two senses of the word bank that are applicable to this sentence (monetary institution; river shore), and yet the sentence is almost universally understood to mean that the robber took the money from a monetary institution. In cognitive theory both senses of the word bank exist in long-term storage and are associated with some nominal level of activation. Furthermore, the activation levels of both senses are increased by the appearance in working memory of the word bank. However, the monetary-institution sense of the word bank receives additional activation by the appearance of the associatively relevant terms robber and money. Because the monetary-institution sense of the word bank is associated with a higher level of activation, it is this sense that guides the processing of the sentence.

This example helps to illustrate how self-consciousness affects self-referent encoding. Just as the stimulus robber facilitates processing of particular kinds of bank-relevant stimuli by activating pools of knowledge about monetary institutions, self-consciousness is proposed to facilitate processing of particular kinds of self-relevant stimuli by activating pools of knowledge
about self. From this perspective, situational manipulations of self-awareness function as cognitive primes to increase the level of activation of knowledge about self. Individual differences in self-consciousness are associated with differences in the activation level of self-relevant knowledge (either by defining a chronically higher activation level of self-relevant knowledge or by defining a more elaborated network of associative connections that function to spread activation to knowledge about self). Public and private self-conscious individuals (see Carver & Scheier, 1981) differ in terms of the general domains of self-knowledge that are activated.

Experiments 1, 2, and 3

The present set of studies follows from this analysis of self-reference processes as a function of self-consciousness and accessible self-knowledge. To facilitate our discussion of these studies, we refer to the model of self-reference processes illustrated in Figure 1. In terms of this model, information is encoded into working memory according to its self-relevance. The efficiency of this self-reference process is a joint function of (a) self-consciousness, because it activates self-knowledge, and (b) the nature of accessible self-knowledge (i.e., its consistency with the information to be encoded) as influenced by situational and dispositional factors. Self-relevant information in working memory may be stored in and retrieved from long-term memory. It may also be integrated in such a way that it affects the nature and activation level of particular aspects of the individual's self-perception, or self-schema. These self-perceptions can have both direct affective and behavioral consequences and indirect behavioral consequences by heightening the activation level of specific activity plans.

As a model designed to account for the processes involved in self-reference, the diagram in Figure 1 is overly simple. In particular, it ignores numerous potential paths and feedback loops (e.g., affect and self-perceptions both influence and are influenced by information retrieved from memory; what is encoded as self-relevant can have effects on affect and behavior independent of conscious self-perception) and is restricted in its view of the variables relevant to self-reference. Nevertheless, it serves well as an expository tool for the presentation of the current research.

The present set of studies pursues our analysis of self-reference processes in three ways:

1. Experiment 1 examines the effects of self-consciousness and a manipulation of accessible self-knowledge on processes involved in the encoding of information according to its self-relevance. The processes examined in Experiment 1 are boxed in Figure 2.

2. Experiment 2 examines the effects of self-consciousness, a manipulation of accessible self-knowledge, and individual differences in the chronic accessibility of self-knowledge on subsequent self-perception. The processes examined in Experiment 2 are boxed in Figure 3.

3. Experiment 3 independently assesses both self-consciousness and individual differences in facility of encoding self-relevant information to determine (a) if these two variables are related to each other, (b) if they have similar effects on behavior, and (c) if statistically controlling for individual differences in facility of encoding self-relevant information eliminates the effects of self-consciousness (thereby implying mediation). The processes examined in Experiment 3 are boxed in Figure 4.

Experiment 1

Experiment 1 examined the effects of self-consciousness and a manipulation of accessible self-knowledge on self-referent encoding (see Figure 2). If self-consciousness affects self-reference
Experiment 1

Long Term Memory

Stimulus

Encoded
According to
Self-relevance

Information in
working memory

Retrieved

A function of:

a. Self-Consciousness

b. Accessible knowledge
about self

1. Situational manipulation

2. Chronic differences

Figure 2. Schematic of the processes investigated in Experiment 1.

processes because it is associated with the activation of accessible self-knowledge, then a manipulation that alters the accessibility of certain forms of self-knowledge (e.g., failure feedback) should alter the effects of self-consciousness such that self-conscious individuals will be biased to efficiently process self-relevant information that is consistent with the accessible self (e.g., depressive-content information following failure). Manipulations of the accessible self should have relatively little effect on low self-conscious individuals.

We tested this analysis with the typical self-reference paradigm. Subjects rated depressive-content and nondepressive-content adjectives according to their self-relevance or their semantic content (Kuiper & Derry, 1982). The nature of accessible self-knowledge was manipulated by assigning subjects success or failure feedback on a different task prior to the incidental memory task. Self and information were therefore correspondent in the failure/depressive-content and success/nondepressive-content conditions. Finally, the effect of self-consciousness was investigated by dividing subjects into high and low private self-conscious groups. The principal hypothesis involved a four-way interaction: Following success, high self-conscious individuals should recall more self-relevant than semantic encoded nondepressive-content words; and following failure, high self-conscious individuals should recall more self-relevant than semantic encoded depressive-content words.

Method

Subjects

Subjects were 26 males and 22 females who participated in partial fulfillment of a course requirement. The Self-Consciousness Inventory developed by Fenigstein, Scheier, and Buss (1975) was used to classify subjects according to their level of private self-consciousness. They were comparable in private self-consciousness ($M = 26.08$) to the standard ($M = 26.31$) reported by Fenigstein et al. (1975).

Procedure

Subjects were run in small groups of from 5 to 11 individuals. On arriving, they were told that they would be participating in a study of spatial abilities. In addition, we explained that to control for background variability in performances it was necessary for subjects to complete a questionnaire booklet. The Self-Consciousness Inventory (Fenigstein et al., 1975) was embedded in this booklet. When subjects completed the booklet, they placed it in a plain manila envelope.

Success–failure manipulation. Following completion of the questionnaire booklet, subjects worked on an embedded-figures test. In the standard version of this test, a subject is asked to determine which of five geometric shapes is embedded within a complex pattern of lines. This standard form was modified to create two experimental tasks by eliminating certain critical lines in the patterns in order to render solvable items unsolvable. In the success condition, 15 of the 16 problems were solvable. In the failure condition, only 4 of the 16 problems were solvable. Subjects were randomly assigned to the experimental conditions by shuffling the stack of tests before the subjects arrived. The experimenter was blind to these conditions.

Instructions for the embedded-figures task and two example solutions were detailed on the cover sheet of the experimental task. In addition, to enhance the perception of their performance in terms of success and failure, subjects were verbally told: “These problems are fairly difficult considering the time limit. Most students score between six and eight correct.” We chose this standard because it fell above the maximum number that failure subjects could solve and below the average number solved by success subjects during pretesting. After working on the task for 10 min, subjects were told to stop and to place the test in the envelope used for the questionnaire packet.

Encoding task. The dependent measure of informational encoding was introduced as a separate experiment conducted for another professor. This measure involved the incidental recall paradigm used by Rog-
ers et al. (1977) and Kuiper and Derry (1982). For this task, subjects were read a list of words one at a time. They were instructed to evaluate the words by referring to a rating sheet. Each word was evaluated with respect to one of two criteria: either its semantic meaning ("Does this word have a specific meaning or relate to a specific situation?") or its self-relevance ("Does this word describe you?"). Prior to the presentation of each word, subjects were instructed to read the evaluation criteria. The word was then orally presented, and subjects responded yes or no on the rating sheet depending on whether the word did or did not meet the criteria. Subjects were randomly assigned to one of two different rating sheets in order to counterbalance the evaluation criteria. The word was then orally presented, and subjects responded yes or no on the rating sheet depending on whether the word did or did not meet the criteria. Subjects were randomly assigned to one of two different rating sheets in order to counterbalance the evaluation criteria. Thus, within a testing session a given stimulus word was evaluated with respect to both evaluation criteria by different subjects, the specific criterion depending on which sheet the subject had been randomly assigned.

The list of words read by the experimenter consisted of 30 depressed-content adjectives and 30 nondepressed-content adjectives in a random order. In addition, two unscored buffer items were added to the beginning and end of the list to protect against possible primacy and recency effects.

After completing the ratings, subjects were told to turn over their rating sheets and write down as many of the words as they could remember. Because the words had been presented verbally, they were available only in memory. Subjects did not anticipate this memory task.

Manipulation checks and debriefing. A final questionnaire was distributed to assess the effectiveness of the success-failure manipulation. This questionnaire assessed subjects’ perceptions of personal success-failure and the difficulty of the task. When this questionnaire was completed, subjects received a thorough debriefing. In addition to explaining the need for deception, we asked subjects to refrain from discussing the study with possible future subjects.

Results

For purposes of analysis a median split was conducted on the measure of private self-consciousness.

Manipulation Checks

The two embedded-figures tests were effective in yielding different test scores. Subjects who received the solvable test solved significantly more of the puzzles than did subjects administered the unsolvable version, \( F(1, 44) = 148.97, p < .001 \). In addition, the test was rated as less difficult by those in the success condition, \( F(1, 44) = 15.77, p < .001 \). Most important, subjects assigned to the success condition rated themselves as having done well much more than did subjects in the failure condition, \( F(1, 44) = 71.94, p < .001 \). These data indicate that performance and perception of performance were successfully manipulated.

Incidental Recall Data

A repeated measures analysis of variance was performed on the incidental recall data excluding the buffer items added to the beginning and end of the adjective list. Differences in word recall frequency were analyzed as a function of the between-subject variables of private self-consciousness and success-failure and the within-subject variables of rating task (semantic/self-referenced) and word content (depressed/nondepressed).

Consistent with previous research (Rogers et al., 1977), there was a main effect of encoding task such that words rated for self-relevance were recalled more frequently than those rated for semantic meaning, \( F(1, 44) = 21.04, p < .001 \). In addition, there was a main effect of depressive content such that nondepressive-content words were more easily recalled than depressive-content words, \( F(1, 44) = 63.97, p < .001 \), although an interaction of content and self-consciousness indicated that this was primarily true for high self-conscious individuals, \( F(1, 44) = 4.87, p < .05 \).

From the perspective of the predictions, the most interesting effects are those higher order interactions that involve the encoding task. There was a significant interaction of encoding task and depressive content such that nondepressed-content, self-referenced words were the most frequently recalled, \( F(1, 44) = 6.09, p < .02 \). This two-way interaction was qualified by a three-way interaction involving success-failure, \( F(1, 44) = 4.26, p < .05 \). Finally, this three-way interaction was qualified by the predicted four-way interaction between rating task, word content, success-failure, and private self-consciousness, \( F(1, 44) = 4.87, p < .05 \). The mean word recall for this 2 x 2 x 2 x 2 classification is presented in Table 1.

To clarify this four-way interaction, separate analyses were conducted for each of the private self-consciousness groups. The principal differences between the groups involved the effects of the success-failure manipulation (both high and low self-conscious groups showed main effects of the encoding task).

Table 1

<table>
<thead>
<tr>
<th>Condition</th>
<th>Depressed content</th>
<th>Nondepressed content</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Semantic</td>
<td>Self-referent</td>
</tr>
<tr>
<td>High self-conscious</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure</td>
<td>0.92</td>
<td>1.29</td>
</tr>
<tr>
<td>Success</td>
<td>1.15</td>
<td>1.38</td>
</tr>
<tr>
<td>Low self-conscious</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure</td>
<td>1.00</td>
<td>1.32</td>
</tr>
<tr>
<td>Success</td>
<td>1.04</td>
<td>1.38</td>
</tr>
</tbody>
</table>

1 We thank Nicholas Kuiper for providing the list of stimulus words and the details of his procedure.

2 These analyses did not adjust for words rated yes versus no. Although Rogers et al. (1977) and Derry and Kuiper (1981) found yes-no effects, several other studies have found no such effects (e.g., Ferguson, Rule, & Carlson, 1983; McCaul & Maki, 1984; Wells et al., 1984). If this variable is included in the analysis it yields the additional results of a yes-no main effect. A Depressive Content X Yes-No interaction, and a Depressive Content X Yes-No X Encoding interaction. None of the 13 remaining interactions are significant. Of special interest, yes-no does not interact with either the success-failure or self-consciousness variables. Furthermore, high and low self-conscious subjects do not differ in either the number of words rated yes or the number of self-relevant words rated yes (both \( Fs < 1.00 \)).

3 This effect is consistent with reports by Kuiper and Derry (1982) that in nonclinically depressed populations, nondepressed- as opposed to depressed-content words yield more consistent self-reference effects.
both ps < .01), and the depressive-content manipulation, both ps < .001. For high self-conscious individuals there was a significant interaction of success–failure and encoding task, $F(1, 23) = 4.56, p < .05$, that was further qualified by a triple interaction of success–failure, encoding task, and word content, $F(1, 23) = 7.70, p = .01$. The nature of these interactions was as predicted: The self-relevant versus semantic encoding difference was greatest for nondepressed-content words following success and for depressed-content words following failure. On the other hand, success–failure did not enter into any effects or interactions for low private self-conscious individuals (all $F$s < 1.00).4

**Discussion**

The results of Experiment 1 demonstrate that the individual's level of self-consciousness determines whether the quality of accessible self-knowledge (i.e., its consistency with the self-relevant stimulus words) affects the process of self-reference. Thus, the quality of accessible self-knowledge (its success or failure character) only affected self-referent encoding if a subject was self-conscious. Its effects on encoding were a function of the consistency of accessible self-knowledge with the self-relevant stimuli (i.e., success/nondepressed-content and failure/depressive-content self-referent processing was facilitated vis-à-vis non-self-referent processing).

These results are consistent with the notion that self-consciousness affects the processing of self-relevant information by increasing the activation of accessible self-knowledge. As stated earlier, within schema theory it is held that the mere possession of relevant knowledge is not sufficient for it to play a role in encoding; the knowledge must be activated at the time of encoding (Alba & Hasher, 1983). By increasing the extent to which accessible self-knowledge is activated, self-consciousness increases the degree to which the character of that self-knowledge influences the processing of subsequent self-relevant information.

Finally, it should be noted that low self-conscious subjects in this experiment did show a self-reference effect. This finding is inconsistent with the findings of numerous other studies (e.g., Experiment 3 in the present article; Agatstein & Buchanan, 1984; Hull & Levy, 1979; Hull et al., 1983). We have two comments with respect to this effect: (a) Low self-conscious people should be considered low in self-consciousness, not non-self-conscious, and will tend to show weaker effects than high self-conscious individuals. (b) The results of Experiment 1 (see also Experiment 2) do show differences between high and low self-conscious groups. The self-referent processing of high self-conscious individuals is more affected than that of low self-conscious individuals by situationally self-relevant cues (e.g., success–failure). When such cues are not manipulated, high self-conscious individuals may show more of a general self-reference effect (see Experiment 3 in the present article; Hull & Levy, 1979). When such cues are manipulated (as in Experiment 1), the self-referent processing of high self-conscious individuals is more affected by the manipulation than that of low self-conscious individuals. These effects provide additional support for the notion that self-consciousness is not associated with a general process of self-relevant encoding so much as it is associated with the encoding subprocess of activating accessible self-knowledge. As a consequence, the general self-reference effect is diminished in high self-conscious individuals when accessible self-knowledge is inconsistent with the stimulus to be encoded as self-relevant (e.g., depressive-content information following success).

**Experiment 2**

Experiment 2 was designed to examine in greater detail the relation between self-consciousness and the activation of information about the self. The processes relevant to the design of Experiment 2 are boxed in Figure 3. In this case, the effects of self-consciousness were examined with respect to (a) a situational manipulation of accessible self-knowledge and (b) a dispositional measure of chronically accessible self-knowledge. The effects of self-consciousness and both types of knowledge sources were assessed within a self-perception paradigm. To specify the nature of self-conscious processes more precisely, the situationally manipulated information about the self was either consistent or inconsistent with the chronically accessible knowledge about the self.

The experiment involved the self-perception of religiosity. We varied the chronic accessibility of religiosity self-knowledge by selecting individuals on the basis of their degree of schematization on the target dimension. Numerous researchers have shown that degree of schematization is associated with the cognitive accessibility of schema-relevant information (e.g., Markus, 1977). Three groups of subjects were selected: proreligious schematics, antireligious schematics, and moderate religious schematics. We hypothesized that both pro- and antireligious schematics would differ from moderate religious schematics in the extent to which information about the religiosity of the self was chronically accessible. Pro- and antireligious schematics should differ from each other in terms of the nature of the information about the religiosity of the self.

In addition to varying chronically accessible self-knowledge, we manipulated the situational accessibility of specific types of knowledge by using a technique developed by Salancik and Conway (1975). These authors used a linguistic device to bias subjects' retrieval of information about their own past behaviors. Subjects biased to retrieve memories of proreligious behaviors subsequently described themselves as more proreligious than did subjects biased to retrieve memories of antireligious behaviors. On the basis of these results, the authors concluded that subjects' self-perceptions are "a function of the cognitive content available to them at the time of expressing their attitudes" (Salancik & Conway, 1975, p. 835).

Finally, the design tested the possibility that the effects of self-consciousness are dependent on the amount of time subjects devote to considering their self-perceptions. Thus, inference processes are traditionally understood to take discriminable amounts of time (Neisser, 1967)—the more complex the pro-

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4 Of the eight possible paired contrasts of semantic versus self-referent encoding effects, two achieved significance. High self-conscious success subjects recalled more self-referent than semantic nondepressed-content words ($p < .001$), and low self-conscious failure subjects recalled more self-referent than semantic nondepressed-content words ($p < .01$). We feel that these contrasts can only be interpreted in terms of the higher order interactions reported earlier.
cesses, the greater the amount of time required. Furthermore, the amount of time subjects contemplate information has been proposed to affect the number and consistency of attitude-relevant cognitions subjects spontaneously generate in response to a stimulus (Tesser, 1978). Increased time and thought should polarize opinions in the direction of activated information because of such rehearsal and elaboration processes.

To reiterate, the purpose of the second experiment was to specify more precisely the ways in which self-consciousness is associated with the activation of self-knowledge. The design allowed for the test of several hypotheses:

1. To the extent that self-consciousness is associated with the activation of chronically accessible self-knowledge, self-consciousness should interact with self-schema to produce more proreligious self-perceptions among proreligious schematics, more antireligious self-perceptions among antireligious schematics, and little effect among moderate schematics.

2. To the extent that self-consciousness is associated with the activation of situationally accessible self-knowledge, self-consciousness should interact with the behavioral salience manipulation of Salancik and Conway (1975) to produce more proreligious self-perceptions following the recent access of proreligious information and more antireligious self-perceptions following the recent access of antireligious information.

3. To the extent that self-consciousness is associated with the activation of accessible self-knowledge and that accessible self-knowledge is interactively determined by situational factors and chronic differences, there should be a three-way interaction of self-consciousness, schema, and behavioral salience.

4. To the extent that they depend on rehearsal and elaboration processes, these effects should be more evident among subjects instructed to take their time and carefully consider their responses to the dependent variable than among subjects instructed to respond immediately.

Method

Subjects

Subjects were 110 undergraduates who participated in partial fulfillment of a course requirement. All subjects participated in a group testing session approximately 3 weeks prior to the actual experiment. Subjects were then preselected to participate in the experiment on the basis of their responses to a religiosity questionnaire. Preselection criteria, modeled after those used by Markus (1977), are reported in the next paragraph. Subjects were run in groups ranging from 7 to 23.

Schematization. Religious schematics were defined as those individuals whose group testing responses were at the extremes of both religious importance and trait measures (top or bottom 4 units of a 16- and 18-unit scale, respectively) and who rated their religious attitudes as highly stable (top 4 units of an 18-unit scale). Individuals who rated themselves in the midrange of both the importance and trait measures (Units 6 to 11 and 6 to 13, respectively) and relatively unstable with regard to religious attitudes (lower than Unit 14) were classified as moderate schematics. The population eligible to participate in the study was thus partitioned into three distinct categories: high religious schematics (high importance, highly religious, very stable), low religious schematics (low importance, highly unreligious, very stable), and moderate schematics (moderate importance, moderately religious, relatively unstable opinions).

Dispositional self-consciousness. Self-consciousness scores (Fenigstein et al., 1975) had also been collected 3 weeks prior to the experiment in group testing sessions and were available for all subjects. The Private Self-Consciousness subscale was of primary interest in the present study (M = 26.71). It is useful to note that private self-consciousness scores were virtually identical for individuals classified as schematics and aschematics (M = 26.94 and 26.39, respectively, F < 1.00).

Procedure

Upon arrival, subjects were given a self-explanatory booklet. They were told to read the instructions carefully and were informed that the total time to complete the booklet was being recorded. Booklets were randomly assigned, and the experimenter was blind to all conditions.

Behavioral salience manipulation. The behavioral salience manipulation was essentially identical to that used by Salancik and Conway (1975). By using subtle word cues, these authors were able to demonstrate differences in the likelihood that subjects endorse specific behaviors as self-characteristic. On the assumption that subjects generate cognitions consistent with endorsement or nonendorsement of each statement, we hypothesized that this procedure would increase or decrease the relative salience of information either favorable or unfavorable to a specific issue. Salancik and Conway (1975) presented evidence to support the view that this technique effectively manipulates the nature of the information retrieved from memory.

Subjects in the present study were randomly assigned a questionnaire specifically designed to facilitate recall of either pro- or antireligious behaviors. Questionnaires designed to facilitate the recall of proreligious behaviors were worded in such a manner that subjects were more likely to endorse proreligious acts and not endorse antireligious acts as self-characteristic. These questionnaires took the following general form:

(a) I occasionally do [proreligious acts].
(b) I frequently do [antireligious acts].
(c) I occasionally refuse to do [antireligious acts].
(d) I frequently refuse to do [proreligious acts].

Questionnaires designed to facilitate recall of antireligious behaviors and inhibit recall of proreligious behaviors were of the identical form with the adverb occasionally substituted for frequently and vice versa. What was manipulated, then, was simply the probability of an affirmative response. In proreligious conditions, subjects were more likely to respond affirmatively to questions about proreligious behaviors and less likely to respond affirmatively to questions about antireligious behaviors than were subjects in the antireligious conditions. Thus, the essential content of all questions was identical across conditions. As a consequence of this manipulation, the relative accessibility of different pools of self-knowledge was systematically biased (see Salancik & Conway, 1975).

Time and thought manipulation. After they had completed the behavioral checklist, one half of the subjects were informed within their booklets to take their time and carefully consider each opinion question before responding: "Take about sixty seconds to think about each question before responding." The remaining subjects' booklets stated: "Take only a few seconds to think about each question before responding."

5 Importance and extremity measures were patterned after Markus's (1977) original criteria for self-schematization. On the basis of her discussion of self-schema, we included the additional criterion of self-rated stability (Bem & Allen, 1974) in the present study. Religious schematization was thusstringently defined in terms of three concomitant variables.

6 All items from the original Salancik and Conway (1975) behavioral checklist were used in the present study with the exception of Questions 11 and 13. We felt that these latter items lacked credibility for the present population.
Experiment 2

Long Term Memory

Stimulus

Encoded
According to
Self-relevance

Information in
working memory

Integrated

Self-Perception

A function of:

a. Self-Consciousness

b. Accessible knowledge
   about self
   1. Situationally manipulated
   2. Chronic differences

Figure 3. Schematic of the processes investigated in Experiment 2.

Dependent measures. The dependent measures were identical to those used by Salancik and Conway (1975). These consisted of (a) five semantic differentials on which subjects were to characterize religion as harmful-beneficial, sick-healthy, pleasant-unpleasant, foolish-wise, and bad-good; (b) a measure of how favorable subjects were with respect to religion in general; and (c) a measure of how religious subjects perceived themselves to be.

Results

For purposes of analysis, a median split was performed on private self-consciousness scores within each experimental condition.

Manipulation Checks

Time. The total time necessary to complete the entire booklet was recorded for each subject. Because time was not instructionally manipulated until after subjects completed the behavioral checklist, this measure represents only a rough estimate of the impact of the time manipulation. Despite this handicap, the main effect of the time manipulation was highly significant, $F(1, 71) = 24.31, p < .001$. Subjects in the “long” condition took, on the average, $1\frac{1}{2}$ min longer to complete the seven scales than did subjects in the “short” condition. There were no other effects or interactions.

Behavioral checklist. Data from the behavioral checklist were combined to examine the effects of the wording manipulation on the probability of an affirmative response. The behavioral reports were first combined to form the four categories specified by Salancik and Conway (1975): total number of pro-religious behaviors, antireligious behaviors, refusals to do pro-religious behaviors, and refusals to do antireligious behaviors. The impacts of the wording manipulation, self-schema, and self-consciousness were then assessed using a multivariate analysis of variance. As expected, the main effects of schema, $F(8, 190) = 11.15, p < .001$, and checklist wording, $F(4, 95) = 6.65, p < .001$, were highly significant. In addition, there was an interaction of schema and checklist wording such that the behaviors reported by moderate aschematics were more affected by the wording manipulation than were the behaviors of either of the schematic groups, $F(8, 190) = 2.08, p < .05$. This latter effect suggests that the salience manipulation was less effective in biasing the information accessible to schematic subjects.

Finally, there was a significant main effect of self-consciousness such that high self-conscious individuals reported more behaviors of all kinds, $F(4, 95) = 3.46, p < .025$. This effect is consistent with the finding by Turner (1980) that high self-conscious individuals generally report more information about self than do low self-conscious individuals. In the present study, high self-conscious individuals did not report more of any one kind of behavior (either pro- or antireligious). This is shown by the fact that when the data are additively combined to reflect quality of the behaviors reported, no effects involving self-consciousness achieve significance (all $ps > .20$). With regard to results reported in the next section, it is important to note that

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7 Time data were not available for one session with 15 subjects due to experimenter error.

8 The effects of time instructions were not assessed in this analysis because this variable was introduced after the behavioral reports. Including this variable in the multivariate analysis yielded no additional effects.
Table 2
Impact of Behavioral Salience, Schematization, and Private Self-Consciousness on Self-Perceptions of Religiosity

<table>
<thead>
<tr>
<th>Schematization</th>
<th>Self-consciousness</th>
<th>Proreligious</th>
<th>Antireligious</th>
</tr>
</thead>
<tbody>
<tr>
<td>High schematic</td>
<td>High</td>
<td>5.57</td>
<td>4.25</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>4.29</td>
<td>4.90</td>
</tr>
<tr>
<td>Moderate schematic</td>
<td>High</td>
<td>2.40</td>
<td>1.18</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>1.36</td>
<td>2.00</td>
</tr>
<tr>
<td>Low schematic</td>
<td>High</td>
<td>-1.33</td>
<td>-2.00</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>-1.67</td>
<td>-1.50</td>
</tr>
</tbody>
</table>

Note: Means represent the combined semantic differential scales of foolish-wise and sick-healthy. They can vary from +6 to -6, with higher numbers being more proreligious.

there was no interaction of self-consciousness and checklist wording \( (F < 1.00) \). Thus, both high and low self-conscious individuals were equally biased in terms of the behaviors they reported as a function of the behavioral salience manipulation.

Dependent Measures of Self-Perception

Because the dependent variables were highly correlated, a multivariate analysis of variance was performed using all seven self-perception measures as criteria. This analysis indicated that for religious self-perceptions there was a significant main effect of schema, \( F(14, 160) = 22.81, p < .001 \). As predicted, proreligious schematics were more favorable toward religion than were moderate aschematics, who in turn were more favorable toward religion than were antireligious schematics.

In addition, there was a significant interaction of behavioral salience (i.e., checklist wording) and self-consciousness, \( F(7, 80) = 2.70, p < .015 \). In order to illustrate the latter effect, the combined means for the two scales with the strongest univariate effects are presented in Table 2. As is evident from this pattern of data, low self-conscious individuals, although affected by the behavioral checklist manipulation in the sense of previously acknowledging greater or fewer religious behaviors as self-characteristic (see previous section on Manipulation Checks), were clearly unaffected by this information in their subsequent self-perceptions. A multivariate contrast of the pro-versus antireligious behavioral salience manipulation was significant for high self-conscious subjects, \( F(7, 80) = 2.79, p = .01 \), but not for low self-conscious subjects, \( F(7, 80) = 1.45, p = .20 \). These results support the hypothesis that self-consciousness is associated with the activation of situationally accessible information about the self (Hypothesis 2): High, as opposed to low, self-conscious individuals reported more proreligious self-perceptions following the recent access of proreligious information and more antireligious self-perceptions following the recent access of antireligious information.

The results provide little support for the remaining hypotheses. That is, there were no other effects or interactions. The lack of any two-way or three-way interactions among schema, salience, and self-consciousness \( (F \) values for both multivariate two-way interactions and the multivariate three-way interaction of these variables were all less than 1.00) suggests that self-consciousness had the same effect on self-perceptions regardless of the individual’s schematization on the issue of religion. This is apparent in Table 2 and is inconsistent with Hypothesis 1. Instead, high self-conscious individuals showed a greater effect of the behavioral checklist on their self-perceptions of religiosity than did low self-conscious individuals at each level of schematization.

Discussion

The results of Experiment 2 support the hypothesis that self-consciousness increases the activation of situationally accessible self-knowledge. Thus, the self-perceptions of high, but not low, self-conscious individuals were a direct function of a situational manipulation of the accessibility of particular self-relevant memories. This effect is similar to the finding in Experiment 1 that self-consciousness facilitated encoding of self-relevant information that was consistent with recent experiences of the self (success vs. failure).

While providing a conceptual replication of the effects in Experiment 1, the design of Experiment 2 also avoids a potential alternative explanation for those effects. Given that previous research has indicated that mood can alter the accessibility of particular memories (e.g., Bower, 1981)—and success—failure undoubtedly has effects on mood—it is possible that the success—failure manipulation in Experiment 1 served to alter accessible self-knowledge by creating a particular mood. Because self-consciousness has been associated with increased sensitivity to mood (e.g., Scheier & Carver, 1977), it is possible that self-consciousness had indirect effects on encoding in Experiment 1 through its effects on subjects’ mood. Unless one makes the rather unlikely assumption that the behavioral checklist in Experiment 2 had similar effects on mood, such an alternative cannot account for the same pattern of effects in this experiment. Taken together, then, Experiments 1 and 2 suggest that self-consciousness is directly associated with the cognitive process of activating the most accessible information about the self.

Although self-consciousness interacted with the situational manipulation of accessible self-knowledge, it did not interact with the variable of chronically accessible self-knowledge (in this case, religious self-schemata). This finding is inconsistent with the findings of several researchers that high private self-conscious individuals show greater correspondence between their long-standing attitudes on an issue and their subsequent behavior (Pryor, Gibbons, Wicklund, Fazio, & Hood, 1977). At the same time, it is consistent with research showing that the self-perceptions of high, as opposed to low, self-conscious individuals are more (not less) reactive to situational self-relevant feedback (e.g., Hull & Young, 1983; Ickes, Wicklund, & Ferris, 1973; Steenbarger & Aderman, 1979). One possible account of this paradox is that self-consciousness does not uniformly activate self-relevant knowledge stores, but rather is biased in favor of activating more accessible self-knowledge. Given that accessibility is a direct function of the recency of previous activation, it follows that recent self-relevant feedback may have a greater influence on the reactions of self-conscious individuals than does chronic information about the self. In the absence of recent feedback, self-consciousness may be associated with the activation of more long-term information about the self. Al-
Experiment 3

Experiment 3 adopted a different approach to investigating the relationship between self-reference and self-consciousness. We hypothesized that if self-consciousness affects behavior through its association with subprocesses in self-referent encoding, then it should be possible to assess individual differences in self-consciousness and facility of self-referent encoding independently to determine (a) if these two variables are related to each other, (b) if they have similar effects on behavior, and (c) if statistically controlling for one eliminates the effects of the other (thereby implying mediation).

The variables relevant to the design of Experiment 3 are boxed in Figure 4. To test these hypotheses, we independently assessed private self-consciousness and facility of self-referent encoding. The former variable was assessed with the Self-Consciousness Inventory (Fenigstein et al., 1975). The latter variable was assessed using the typical self-reference paradigm. For present purposes we assumed that incidental recall of information previously encoded as self-relevant was a direct indicator of individual differences in facility of self-referent encoding. The test of the first hypothesis therefore involved a correlation of self-consciousness and incidental recall of self-referenced information.

In order to test the second and third hypotheses it was necessary to select a behavior known to be affected by self-consciousness. Because previous research indicated that high self-conscious individuals are more reactive to failure feedback than are low self-conscious individuals (Hull & Young, 1983; Ickes et al., 1973; Steenbarger & Aderman, 1979), subjects worked on a task designed to result in failure. Previous research has indicated that following such a failure, high self-conscious individuals experience more negative affect and are more likely to reduce their expectations and perseverance at future tasks than are low self-conscious individuals (Carver & Scheier, 1981). We therefore predicted that these affective and behavioral consequences would be (a) correlated with individual differences in private self-consciousness, (b) correlated with individual differences in incidental recall of self-referenced information, and (c) not correlated with individual differences in private self-consciousness after partialling out the effect of individual differences in self-reference.

Method

Subjects

Subjects were 38 undergraduates who participated in partial fulfillment of a course requirement. All subjects participated in a group testing session approximately 2 months prior to the actual experiment during which they completed the Fenigstein et al. (1975) Self-Consciousness Inventory ($M = 24.47$).

Procedure

Assessment of self-referent encoding. Dispositional facility of encoding self-relevant information was assessed with the incidental memory paradigm described in Experiment 1. Briefly, subjects rated a series of 30 words according to either their structural, semantic, or self-relevant content. They were then asked to recall as many words as possible in an unanticipated memory task. Following completion of this task, the first experimenter stated that her experiment was completed and that the remainder of the hour would be spent with a second experimenter. She then collected her materials, introduced the second experimenter, and left.

Failure manipulation. The second experimenter explained that for the remainder of the hour subjects would work on three concept forma-
tion tasks. The first task was designed to induce failure and consisted of 16 embedded figures, of which only 4 were solvable (see Experiment 1). Subjects were told that the problems were fairly difficult given the 10-min time limit and that the average student solved only 7 to 8 of the 16 problems. In fact, only 4 of the problems were solvable, and in an earlier study with these problems (failure condition of Experiment 1) subjects solved an average of only 2.25.

Dependent measures: mood, expectations, and perseverence. Following the embedded-figures task, subjects were asked to fill out a mood questionnaire (Nowlis, 1965). They were told this served the purpose of statistically controlling for mood in subsequent tasks. Following the mood rating, subjects were told that there were two remaining tasks. It was explained that all subjects were to work on a standard embedded figure. In addition, subjects were told that after working on this required figure they had the option of working on (a) additional embedded figures, (b) word analogies, or (c) word anagrams at one of three levels of difficulty. They were then asked to make their choice for this final task. After subjects made this choice, they were handed both the required embedded figure and an envelope that ostensibly contained their choice of a final task.

The cover sheet of the required embedded figure asked subjects to estimate how well they would do on the task (1 to 9 scale: very poorly to very well). This question was conceived as a measure of subjects' expectations about performance.

Subjects were told that they could work on the required figure for as little or as long as they liked. In addition, they were told that once they felt like working on the final task, they should turn over the embedded figure and open the final task envelope. The amount of time subjects actually worked on the required figure was surreptitiously recorded as a measure of persistence. The final envelope contained only a written debriefing that explained the nature and purpose of all of the experimental tasks.

Results

Self-Consciousness and Self-Reference

As in previous studies, buffer items were added to the beginning and end of the encoding task and were excluded from further analyses. As predicted, the results of these analyses revealed a significant positive correlation between private self-consciousness and number of self-referenced words recalled, r(38) = .37, p = .01. Virtually identical results were obtained for a relative measure of self-reference created by subtracting the average number of non-self-referenced words recalled from the average number of self-referenced words recalled, r(38) = .38, p = .01.

To compare our results with those of previous studies (Agatstein & Buchanan, 1984; Hull et al., 1983; Hull & Levy, 1979), we used a median split to divide subjects into high and low self-conscious groups. The results were then analyzed using a 2 (high--low private self-consciousness) × 3 (self-referenced, semantic, and structural encoding task) mixed-design analysis of variance. These results revealed a near significant interaction of self-consciousness and encoding task, F(2, 35) = 2.79, p = .07. No other effects approached significance. Within-cell comparisons revealed that high and low self-conscious groups did not differ in recall of structurally and semantically encoded words (both ts < 1.25), but high self-conscious individuals recalled more self-referenced words than did low self-conscious individuals, (t = 1.70, p < .05, one-tailed).

For additional analyses, the number of self-referenced words recalled was taken as a direct indicator of individual differences in self-referent encoding.

Mood Following Failure

Following failure at the task, private self-consciousness was only related to the mood subscale of sadness, r(38) = .29, p = .04. In a somewhat striking parallel, memory for words encoded as self-relevant was also not related to any of the mood subscales other than sadness and showed virtually the same degree of association to sadness as did private self-consciousness, r(38) = .29, p = .04. In both cases, being high in private self-consciousness or showing a facility at encoding self-relevant information was associated with greater sadness following failure at a task. Finally, as predicted, the correlation between private self-consciousness and sadness was no longer significant after partialing out the effects of self-relevant memory, r(38) = .19, p < .10. The corresponding correlation between self-relevant memory and sadness after partialing out the effects of self-consciousness was also not significant, r(38) = .22, p = .10.

Expectations and Behavioral Persistence

None of the correlations between self-consciousness and the measures of behavioral expectations and persistence achieved conventional levels of significance. Similarly, none of the correlations between self-relevant memory and these measures achieved significance. Although the results of these variables parallel one another, the fact that they involve null effects makes interpretation tenuous.

General Discussion

Experiment 3 provides some evidence that self-referent encoding processes mediate the effects of self-consciousness on affect. Thus, individual differences in self-consciousness were associated with individual differences in self-referent encoding processes. This is consistent with previous research by several research teams (Agatstein & Buchanan, 1984; Hull & Levy, 1979; Nasyby, 1985). Individual differences in self-consciousness were associated with increased sadness following failure, which is also consistent with previous research (Hull & Young, 1983; Ikees et al., 1973; Steenbarger & Aderman, 1979). Individual differences in self-referent encoding were also associated with increased sadness following failure. To our knowledge, this is the first time that self-referent memory processes have been associated with affective consequences. Finally, individual differences in self-consciousness were not associated with increased sadness following failure after the effects of individual differences in self-referent memory were statistically partialed out of the dependent variable.

Admittedly, the results of Experiment 3 could have been stronger (e.g., both self-consciousness and self-reference could

9 Due to the directional nature of the predictions, all correlation probabilities are based on one-tailed tests.

10 The correlation between private self-consciousness and expectations was not significant (r = .17, p = .15), and consequently these results do not lend themselves to a partial correlation analysis. Nevertheless, a median split on private self-consciousness did reveal a significant effect: High self-conscious subjects had lower expectations than low self-conscious subjects. (361) = 2.06, p < .05. The results are therefore mixed with regard to the original prediction that self-consciousness would decrease expectations following failure.
have been more strongly related to sadness; self-consciousness could have been related to expectations and persistence, thus allowing additional tests of the model). Nevertheless, when the three experiments are taken together they provide converging evidence that self-consciousness may mediate between social stimuli and subsequent self-perceptions and behaviors through its association with the activation of accessible self-knowledge. In Experiment 1, self-consciousness increased the extent to which the character of accessible self-knowledge influenced the encoding of self-relevant information. In Experiment 2, self-consciousness increased the extent to which the character of accessible self-knowledge influenced subsequent self-perceptions. Finally, in Experiment 3, individual differences in self-referent encoding were associated with individual differences in self-consciousness; both variables were associated with increased affective reactions to self-relevant feedback; and partialing out individual differences in facility of encoding self-relevant information eliminated the effects of self-consciousness.

Theoretical Accounts of the Effects of Self-Consciousness

*Self-consciousness, self-referent encoding, and behavior.* The logic of the current studies represents a refinement of a model of self-consciousness proposed by Hull and Levy (1979). According to these authors, high and low self-conscious individuals differ in terms of the encoding processes they use to understand the environment. Encoding processes are defined as involving the transfer of sensory information into a meaningful cognitive representation in working memory (see Figures 1 through 4). These processes essentially define the form of information available to the individual, take place automatically, and do not require active control or focal attention by the subject (see Schneider & Shiffrin, 1977).

Within this framework, the value of the present set of studies is twofold. First, they serve to specify further the relationship of self-consciousness and self-referent encoding in terms of the activation of accessible self-knowledge (Experiments 1 and 2). Second, they serve to demonstrate how these differences can result in affective and behavioral consequences (Experiment 3). Thus, if two individuals encode the same stimulus differently (e.g., one encodes it as self-relevant, the other does not), their subsequent cognition and overt behavior differ because they have represented the stimulus in different ways. Hofstadter and Dennett (1981) provided an excellent illustration of this claim:

Pete is waiting in line to pay for an item in a department store, and he notices that there is a closed-circuit television monitor over the counter—one of the store's measures against shoplifters. As he watches the jostling crowd of people on the monitor, he realizes that the person over on the left side of the screen in the overcoat carrying the large paper bag is having his pocket picked by the person behind him. Then, as he raises his hand to his mouth in astonishment, he notices that the victim's hand is moving to his mouth in just the same way. Pete suddenly realizes that he is the person whose pocket is being picked. (Hofstadter & Dennett, 1981, pp. 20–21)

As the authors of this passage point out, this dramatic shift in perspective is not so much a difference in the information that is being processed as it is a difference in the way the information is being processed. Certainly, Pete was processing information prior to his “discovery,” and furthermore this information had to do with a man being robbed in a department store. Because the person being robbed was in fact himself, he was actually thinking about himself prior to his discovery. But, as Hofstadter and Dennett (1981) concluded, “He wasn’t thinking about himself as himself; he wasn’t thinking about himself in the right way” (p. 21). In terms of the model presented by Hull and Levy (1979), Pete was not self-conscious prior to his discovery. Furthermore, self-consciousness in this sense specifically involves the activation of knowledge about self and the encoding of environmental stimuli according to their self-relevance. The difference in the way Pete thinks and acts before and after his discovery depends on a shift in the way the information on the television screen is being organized or encoded such that he shifts from encoding information as non-self-relevant to self-relevant. The affect he experiences (e.g., fear) and the activity in which he engages (e.g., self-defense) are direct consequences of this shift.

*Alternative models of self-consciousness.* In addition to specifying more precisely the nature of the cognitive processes associated with self-consciousness, we feel that the present set of studies also suggests a potential reconciliation between different models of self-conscious behavior. To illustrate these arguments, it is necessary to briefly consider theoretical differences in the area.

One of the principal purposes of the Hull and Levy (1979) analysis was to identify the invariant properties of self-conscious states. They did so in terms of self-relevant encoding processes. In contrast, a theory proposed by Duval and Wicklund (1972; Wicklund, 1975) identified the invariant properties of self-consciousness in terms of self-focused attention and self-evaluative comparison of the present and ideal selves. Hull and Levy (1979) criticized this analysis by presenting evidence that self-consciousness is not invariantly associated with either focal attention on the self or a comparison process of self-evaluation. With regard to the latter process, whether self-consciousness is associated with self-evaluation depends on the quality of the self-relevant information. When this information is self-evaluative (e.g., indicative of success or failure), self-consciousness is associated with differential self-evaluation. The quality of the self-evaluation (positive, negative, etc.) is then a function of the quality of the self-relevant information. When the information is not self-evaluative, self-consciousness is not associated with differential self-evaluation (Davis & Brock, 1975; Greenberg & Musham, 1981). In subsequent statements, Wicklund and Horn-muth (1981) concurred that self-evaluation is not an invariant property of the self-conscious state.

In addition to the Duval and Wicklund (1972) and Hull and Levy (1979) models, Carver and Scheier (1981; Carver, 1979) also proposed a model of self-consciousness. In their extended discussion of self-consciousness and self-relevant cognition, Carver and Scheier (1981) incorporated several of the arguments forwarded by Hull and Levy (1979). However, they went considerably beyond previous models in specifying potential consequences of self-consciousness under various conditions. Although they discussed many of these effects in terms of a particular type of comparison process (i.e., matching perceived behaviors to behavioral standards), they did not appear to identify this process as an invariant property of self-consciousness (see their discussion of emotion).

In the Carver and Scheier (1981) model, the only invariant prop-
tery of self-consciousness appears to be its association with "self-focused attention." At the same time, it is unclear whether self-focused attention has any invariant properties other than its association with self-consciousness. In the Duval and Wicklund model, self-focused attention was associated with an increased tendency to "focus upon the self to the exclusion of other parts of the environment" (Duval & Wicklund, 1973, p. 20). Hull and Levy (1979) argued against this position on the basis of existing research. Although Carver and Scheier adopted the Duval and Wicklund term self-focused attention, they specifically denied the latter authors' claim that it has the invariant property of disrupting the processing of environmental information ("self-focused attention does not invariably interfere with perception," Carver & Scheier, 1981, p. 94). This is consistent with Wicklund's current claim that the term self-focused attention is synonymous with self-consciousness in that it has no independent empirical referents (Wicklund & Hornuth, 1981, p. 1033).

We feel that the present studies offer a potential means of reconciling the Hull and Levy (1979) and Carver and Scheier (1981) analyses of self-consciousness. From this perspective, self-consciousness has the invariant property of increasing the encoding of information according to its self-relevance by increasing the activation of accessible self-knowledge. The nature of the subsequent cognitive, affective, and behavioral consequences of this encoding process depends on the nature of the information encoded as self-relevant. Thus, effects of self-consciousness such as increased self-evaluation, intensified emotional reactions, and disruption of environmental information processing are not invariant properties of the self-conscious state, but rather depend on the nature of the information processed as self-relevant. We prefer the term self-referent encoding to self-focused attention because the former more accurately captures the nature of the cognitive processes invariantly associated with self-consciousness.

An Integrated Approach to Self, Cognition, and Behavior

The present experiments suggest a particular type of cognitive process underlying the effects of self-consciousness. In addition, however, they go beyond much of the previous research on self-relevant cognition by attempting to directly tie social stimuli (e.g., success-failure feedback) to self-referent memory processes (Experiment 1), self-referent memory processes to subsequent self-perceptions (Experiment 2), and social stimuli to subsequent affect and behavior via self-referent memory processes (Experiment 3).

Although these studies are not unique in their attempt to tie self-cognition to broader social stimuli and behaviors (e.g., Ingram et al., 1983; Salancik & Conway, 1975), they do stand in contrast to much of the research on self-relevant cognition. To date, most research has concentrated on demonstrating that self-referent encoding schemes are more efficient than alternative encoding schemes (Agatstein & Buchanan, 1984; Ferguson et al., 1983; Ganellen & Carver, 1985; Hull & Levy, 1979; Kuiper & Rogers, 1979; McCaul & Maki, 1984; Markus, 1977; Rogers et al., 1977; Wells et al., 1984) or are associated with effects typical of cognitive prototypes (Kuiper, 1981; Nasby, 1985; Rogers et al., 1979). Even when researchers have attempted to tie self-referent cognition to preceding social events or subsequent behaviors, however, they have frequently done so in an indirect way by showing that a particular psychological variable is associated with specific memory processes in one experiment and specific behavioral consequences in another experiment.

In contrast to such indirect approaches, we recommend that researchers adopt an approach in which (a) the impact of a social event on memory processes is shown to be a function of a psychological variable; (b) the impact of memory manipulations on subsequent behavior is shown to be a function of the same variable; and (c) the effect of the psychological variable on moderating the influence of a social event on behavior is associated with an independent measure of the theorized mediational process. Although there are weaknesses in some of the results of the present studies (e.g., in Experiment 2, the predicted interaction of self-consciousness and chronically accessible self-knowledge is not significant: in Experiment 3, the expectations and persistence measures failed to yield effects for self-consciousness), the experiments chronicle what we feel to be the best approach for future research on the interrelationships of self, cognition, and behavior.

References


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