
The Self-Reference Effect: Demonstrating Schematic Processing in the Classroom

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The self-reference effect, which occurs when individuals show superior memory for information that pertains to their self-schemas, was demonstrated in a classroom setting. Subjects first evaluated whether or not each adjective in an orally presented list was self-descriptive. After a 1-min delay, they attempted to recall all the adjectives from the list. As expected, memory for self-referent terms was superior to memory for terms that were not self-referent. The exercise offers a pedagogically effective way of demonstrating schematic processing under normal classroom conditions, and it also confirms predictions derived from depth-of-processing and schema-based memory models of social cognition.

Schemas have emerged as central theoretical constructs in contemporary analyses of interpersonal perception. Drawing on studies of the reconstructive nature of memory, schema theory assumes that information about the social world is organized within a system of cognitive associations. These networks consist of memory nodes pertaining to specific schema-relevant concepts and pathways that link these nodes to one another (Kihlstrom et al., 1988). *Person schemas*, for example, summarize one's intuitive understanding of other people, including their typical behaviors, traits, and goals. *Self-schemas* organize perceptions of one's own qualities, and *stereotypes* describe the typical characteristics of people in various social groups. *Event schemas*, or scripts, define and structure one's perceptions of social situations (Fiske & Taylor, 1991).

We could not encode, store, or retrieve social information if we did not possess schemas. Students, however, sometimes have difficulty recognizing the impact of schemas on social perception and cognition. Researchers have documented a number of schematic-processing effects, but these effects are often so subtle that relatively sensitive measures are required to detect them. Moreover, even though the effects of schematic processing are ubiquitous, individuals have no access to these cognitive processes; perceivers cannot monitor their use of schemas when encoding and retrieving information (Nisbett & Wilson, 1977). Behaviorally oriented students tend to question the need to posit these cognitive constructs.

Given the centrality of the schema concept in social and cognitive psychology and students' difficulties in grasping this complex construct, we developed a classroom demonstration of schema-based processing. The demonstration takes advantage of the self-reference effect: the tendency for individuals to show superior memory for information that pertains to their self-schemas. When individuals are asked to describe their political beliefs, those who possess well-defined self-schemas pertaining to politics can describe their beliefs in much more detail than individuals who are aschematic with regard to politics (Fiske, Lau, & Smith, 1990). People who adopt a feminine gender identity (feminine schematics) require less time when they are asked to rate

their feminine attributes rather than their masculine attributes. Masculine schematics show the reverse tendency, and individuals who are aschematic on both masculinity and femininity respond with equal rapidity and confidence to both types of attributes (Markus, Crane, Bernstein, & Siladi, 1982). Also, when individuals are exposed to a long string of adjectives, they can recall more of the self-referent adjectives compared to the nonrelevant adjectives (Rogers, Kuiper, & Kirker, 1977).

We used an incidental memory procedure to demonstrate the self-reference effect. Students were asked to indicate which of a number of adjectives read aloud were self-descriptive. Next the students were, without previous warning, asked to recall as many of the adjectives as they could. Students then reviewed their list of recalled adjectives and indicated whether or not each recalled adjective had been previously rated as self-referent or nonreferent. The self-reference effect was demonstrated if the percentage of self-referent items recalled exceeded the percentage of nonreferent items recalled.

Method

Undergraduate (16 women and 14 men) and graduate (23 women and 5 men) students enrolled in Social Psychology participated in the study. At the beginning of the exercise, each participant numbered a blank sheet of paper from 1 to 20. The instructor, who was a man, then read a list of 18 adjectives aloud after telling the students to circle the number corresponding to the adjective if they felt it was self-descriptive. If, for example, students thought that Item 6, "loyal," described them, then they would circle the number 6 on their sheet of paper. The items were drawn from Tzuril (1984) and included the following: forceful, quiet, generous, dominant, tender, loyal, independent, compassionate, adaptable, courageous, cheerful, secretive, principled, romantic, responsible, dynamic, forgiving, and careful.

When the self-rating task was completed, the instructor talked about miscellaneous class matters for 1 min. He then told the subjects to list, in any order, all of the adjectives they could remember. When students finished the incidental recall task, the instructor distributed the list of items. The students counted and recorded the total number of adjectives they circled during the self-rating task, the number of self-referent words recalled, and the number of nonreferent words recalled. Then they calculated the percentage of self-referent adjectives recalled and the percentage of nonreferent adjectives recalled. Percentages were used to take into account the varying number of self-referent words initially identified by subjects. If, for example, a subject felt that 12 of the 18 items were self-referent, then by chance alone his or her recall list would include more self-referent items. Evidence of self-reference, in this procedure, requires that the percentage of self-referent items recalled exceeds the percentage of nonreferent items recalled.

Results

Analysis of students' responses suggests that the demonstration effectively documented the self-reference effect.

Subjects recalled only an average of 42.5% of the non-referent words compared to 56.0% of the self-referent terms. A 2×2 (Sex \times Type of Adjective [self-referent vs. non-referent]) mixed analysis of variance yielded only a main effect for type of adjective, $F(1, 56) = 13.82, p < .001$.

Discussion

The procedures used in this demonstration, although rudimentary, are sufficiently sensitive to document the self-reference effect: Subjects' memory for self-referent items was superior to their memory for items that were not self-referent. The procedure is also a practical one. Because it does not require individual testing sessions or reaction time assessment, it can be used during class with a large group of students.

The demonstration also facilitates the analysis of several methodological and theoretical issues concerning schematic processing of information. Initially, students maintained that their incidental recall scores were shaped primarily by the vividness of the trait terms. Attention-getting trait terms, they contended, were better remembered than more pallid terms. The exercise, however, convincingly demonstrated to them the impact of their self-schemas because more memorable words were also more self-descriptive words. The discussion also proved useful in illustrating research design and data analysis. Some students, for example, failed to correct for initial frequencies of self-descriptive terms when they first explored the effect. Students often recalled more self-referent words than nonreferent words, but this difference cannot be interpreted until scores are adjusted to reflect the number of items initially selected as self-referent.

The demonstration also facilitated the analysis of depth-of-processing and schema-based memory models of social cognition (Klein, Loftus, & Burton, 1989). First, depth-of-processing theory maintains that self-referent information is processed at a deeper level than nonreferent information. If, for example, the students were asked "Does the word have more than two syllables?," they could respond without processing the word very deeply. Such shallow processing would not lead to particularly durable memories. In contrast, self-referent encoding requires much deeper processing (Klein & Kihlstrom, 1986). Second, schema theories suggest that the more elaborate the schema that will hold the incoming information, the better our ability to recall that information. Self-schemas may be the most complex and intricate associative networks in our memory system, so self-referent information is particularly memorable. Both of these theories could be demonstrated in the classroom by varying the initial question posed to subjects. Although some students could answer the question "Does the word describe you?," others could be asked "Does the word have more than two syllables" or "Does the word describe your psychology teacher?" (Bellezza, 1984).

Depending on interest, the exercise could also be used to explore the cognitive consequences of gender identity. Because the adjectives used fall into three categories—masculine, feminine, and neutral—students' self-ratings reflect their sex-role orientation. Masculine individuals, for example, should circle more of the items that reflect mas-

culine qualities (e.g., dominant and independent), whereas feminine individuals should circle more of the items that reflect feminine qualities (e.g., tender and compassionate). Recall scores, too, can be reexamined to explore memory biases. Individuals who incorporated masculinity into their self-concepts should recall more masculine than feminine words, whereas feminine schematics should remember more feminine adjectives than masculine ones (Markus et al., 1982).

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Note

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Midterm Evaluation of Teaching Provides Helpful Feedback to Instructors

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Advantages of using student evaluation of teaching effectiveness at midterm are discussed. They include receiving information on microbehaviors of teaching instead of global ratings, getting feedback that can be used immediately, and bypassing some of the

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