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5 The Specifics of Memory and Cognition

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If periods in the history of psychology were named as are periods in the history of art, the last 20 years or so would be termed the "abstractionist" period. During that period, cognitive psychologists have attempted to invent abstract representations that capture the essence of different classes of events. Those abstract representations are given psychological reality in that they are said to be used in an invariant fashion across a wide range of situations to identify and respond to members of the abstract class or category. For example, it might be claimed that a situation is classified and responded to in terms of some schema that has been abstracted across experience in situations that are similar to a present one (e.g., Hastie, 1981). The abstractionist approach is very well suited to explain stability in performance across situations. Indeed, the focus is on similarities among situations (defined in terms of shared attributes or characteristics) and the use of those similarities to create an abstract representation of some general class or category. The prediction is that performance will be stable across situations that are members of the same general class.

Smith's chapter can be seen as contributing to the demise of the abstractionist period. He argues that schemas and other abstract representations have been given too much importance in theorizing about social cognition. Smith supports his argument by reviewing research to show that the effects of prior experience are often more specific than would be predicted by an abstractionist view. Smith interprets those data as showing that social judgments are often based on the similarity of a current case to a particular remembered exemplar rather than on the use of an abstract representation. Using one of Smith's examples, a person might be classified as being a Republican because his physical appearance re-

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minds me of my Uncle Harry who is a Republican rather than, as an abstractionist view would have it, because he has some characteristics that are shared by most Republicans.

We are very sympathetic toward Smith's view of social cognition. Indeed, his view is similar to our (e.g., Jacoby & Kelley, in press; Jacoby & Brooks, 1984) view of the effects of prior experience on perception and categorization. Our experiments have typically examined effects on word and picture perception, but the issues are the same as for social cognition. Although similar, there are some potentially important differences between our view and that proposed by Smith. We provide comments on some of those differences along with a brief description of our view. Next, we consider differences in research strategies. At issue in that discussion is the choice of goals for future research. We illustrate our research strategy by briefly describing a few lines of research that have grown out of our episodic view of cognition.

AN EPISODIC VIEW OF COGNITION

We have used the specificity of effects of prior experience as evidence that those effects arise from memory for prior episodes rather than from the priming of an abstract representation. The effects of prior experience on social judgment have been described as due to the priming of an abstract representation such as a schema or trait concept (e.g., Higgins, Rholes, & Jones, 1977; Wyer & Srull, 1986). Similarly, the effect of reading a word on its later perceptual identification has been described as produced by the priming of a logogen (e.g., Morton, 1969), a representation of the word that has been abstracted across prior encounters with the word. A priming view predicts that the effects of recent prior experience will be short lived and uniform across members of a primed category. This is because an abstract representation of a category does not preserve any information about the particular event that primed the category, so effects on later perception or interpretation of the earlier presented "prime" should not differ from effects on other members of the category. Counter to a priming view, we have found that presenting a word once in the experimental setting can have a large and long-lasting effect on its later identification. Also, the effect is specific to the details of the earlier processing of the word (e.g., Jacoby, 1983a, 1983b). The pattern of results is the same as used by Smith to argue that social judgments can be based on memory for an earlier-presented exemplar.

Whereas Smith has chosen to talk about memory for exemplars, we have chosen to emphasize the importance of memory for prior episodes. Our episodic view of cognition is generally consistent with the exemplar view of concept learning that Smith adopts. The major difference is that exemplar views have typically described memory for an exemplar as being a veridical copy of the presented stimulus. Contrary to a "copy" theory of memory, most contemporary accounts of episodic memory hold that memory for an item reflects what one did

with that item and, consequently, is influenced by task demands, the context in which the item was encountered, etc. This variability in the encoding of a stimulus is important because the encoding of an item constrains its later retrieval. Retrieval depends on the similarity between the retrieval cues and the encoded trace, making it necessary to consider encoding and retrieval jointly rather than in isolation. Transfer is maximal when the earlier processing of an item matches that required by the test of transfer (e.g., Kolers, 1979; Tulving & Thomson, 1973). Our episodic view extends these claims about memory to theorizing about effects of prior experience on performance of perception and categorization tasks. It is the claim that performance reflects differences in the encoding and retrieval of presented exemplars that makes our view an episodic view.

The use of the term "episodic" to name our view is meant to highlight the possibility that many of the factors that are important for performance on tests of episodic memory are also important for showing effects of prior experience on perception and categorization. Much of our research has been aimed at examining the effects of encoding and retrieval factors on performance of perceptual and categorization tasks. For example, by our episodic view, perception and judgment are expected to vary across changes in test context. This is because retrieval factors determine the particular prior episodes that are retrieved from memory to guide perception and interpretation of later events. A disadvantage of using the term *episodic* is that episodic memory has traditionally referred to an aware use of memory as measured by performance on a test of recall or recognition memory. Although we refer to influences of memory for prior episodes, we do not mean to imply that people are always aware of those prior episodes or the effects of memory on their performance. A central theme of our research (e.g., Jacoby & Kelley, 1987; Jacoby, Kelley, & Dywan, 1989) has been that memory for prior episodes often produces unconscious influences on performance.

One point of disagreement with Smith concerns the utility of his distinction between content specificity and processing specificity. By that distinction, the content of stimulus materials and the processing applied to the stimulus materials are separate. We would argue that stimulus materials do not have any content that is separate from the processing of those materials. As stated earlier, we and many others see memory as being for material as processed. Examining content specificity requires presenting stimulus materials in the context of some processing task and the degree of specificity that is found will almost certainly vary with the task that is chosen, showing that it is the interaction between the task and the materials that is important. Kolers and Smythe (1979) discuss other disadvantages of drawing a distinction between processing and content.

A second point of disagreement deals with Smith's claim that the specificity of the effects of prior experience can be treated as a "signature" to identify how those effects were mediated. The specificity of effects can be used to reject some simple abstractionist models of categorization performance. However, more

complex abstractionist models can be used to predict that effects of prior experience will be very specific, rendering useless the specificity of effects as a means of rejecting abstractionist models as a class (e.g., Barsalou, this volume; Whittlesea, 1987). Also, exemplar or episodic models do not have to predict that the effects of prior experience will be extremely specific (e.g., Jacoby, Baker, & Brooks, 1989).

FUTURE DIRECTIONS

Is an episodic view useful? Given that the specificity of effects cannot be used to reject abstractionist models, is there any reason to entertain an episodic view of cognition. We believe that the major advantage offered by an episodic view is its heuristic value. Focusing on the theoretical conclusions that can be drawn from a finding of very specific effects of prior experience ignores how one goes about finding such effects. We have found that manipulations taken from experiments on episodic memory are useful for exploring effects on performance of perception and categorization tasks. We illustrate our research strategy by briefly describing three lines of research that have come from our approach. The first line of research examines the effects of an episodic memory variable, test context, on perception and judgments. Next, we describe a line of research that is meant to provide converging evidence for claims based on differences in the specificity of effects. The procedure that we use to investigate differences in social judgments is one that we have previously used in our investigations of memory. Our strategy has typically been to attempt to produce interactions that can be interpreted in terms of a contrast between different bases for perception and judgments. A third line of research explores unconscious influences of memory on subjective experience. We suggest that effects on subjective experience can be used as an indirect test of attitudes and other aspects of social cognition. The nonanalytic judgments revealed by effects on indirect tests contrast with judgments made on a more analytic basis.

Unconscious Retrieval: Effects of Test Context

Reinstating earlier context at the time of test is likely important for showing unconscious influences of memory on social judgments. This possibility can be illustrated with an example of a confusion that is akin to unintentional plagiarism. Coming back from a lecture, a graduate student serving as a teaching assistant for one of my (Jacoby) courses told an anecdote that he suggested could be used to illustrate a point made in the lecture that day. The anecdote was one that I used in exactly the way that the student suggested when teaching the same course a year earlier. Although the student had also been my assistant for the earlier teaching of the course and, so, had likely heard the earlier lecture, he

claimed to not remember having heard me tell the story. Rather, he claimed to have heard the anecdote from one of his undergraduate professors. It is unlikely that the student's account was correct because I invented the anecdote and his undergraduate professor, when asked, denied having ever heard the anecdote. The point is that the story came to mind for the student in a context very similar to that in which it was earlier heard although the student did not recollect earlier hearing the story in that context. Reinstating the context of the lecture resulted in retrieval of memory for the story. That effect of context on retrieval was unconscious in that its importance was not realized—the context was not actively used to aid retrieval or else the student would not have failed to recognize the story as earlier heard in the context. We might often show evidence of unconscious retrieval by telling a story to the very person from whom we stole it. Jacoby, Kelley, and Dywan (1989) review evidence of effects of this sort.

As illustrated by the foregoing example, manipulations of retrieval factors can be important for showing unconscious influences of memory for a prior episode. Memory for a prior experience can be unconsciously retrieved and used to guide the perception and interpretation of a later event. We realize that this use of the term *retrieval* is potentially confusing because the word is traditionally used to refer to an aware use of memory. However, manipulations of test context (a factor usually considered as influencing retrieval) can have effects that are dissociated from performance on tests of recall and recognition memory.

In our investigations of word perception, we found effects of reinstating context that clearly did not depend on a person's ability to recall or recognize the tested items. We (Allen & Jacoby, ~~1989;~~ Jacoby, 1983b) found that earlier reading a word did more to enhance its later perceptual identification if nearly all, rather than very few, of the words presented for the test of perceptual identification had been earlier read. That is, reinstating study-list context at the time of test increased the effect of reading a word on its later identification. This effect of reinstating context did not result from people consciously using memory for the earlier-read list to aid their later perceptual identification performance. Had that been the case, reinstating list context should have had the largest effect for words that people could recall or recognize as previously presented. However, the opposite was found. The effect was largest for words that people were unlikely to recall or recognize. Although a person was unable to recall or recognize a word as previously presented, reinstating study-list context made unconscious retrieval of memory for the prior presentation of the word more likely as shown by the effects of that memory on word perception.

It is the inconsistency in behavior across situations that is not well captured by a simple abstractionist view. However, the change in judgments across situations is understandable if retrieval factors are important. The effects of retrieval factors that we have obtained are expected given an episodic view but cannot be explained in terms of a simple abstractionist view of perception and judgments. By an abstractionist view, performance should not be influenced by manipulations of

context of the sort that we have used. The make-up of a test might also have a large impact on the basis that people employ to make judgments. As described earlier, perceptual performance is most influenced by memory for prior episodes when nearly all the items on the test were previously presented so that study context is reinstated. An analogous effect has been obtained for categorization performance (Allen & Brooks, 1989) and can probably also be found for social judgments.

Abstracting as a Secondary Task

The impossibility of using differences in the specificity of effects to choose among models of categorization performance is less important if one can find sources of converging evidence to support claims that judgments are based on memory for prior episodes. Hastie and Park's (1986) distinction between on-line and memory-based judgments seems to roughly correspond to a claim that judgments are sometimes based on an abstract representation and sometimes based on memory for prior episodes. The evidence that they use to justify their distinction does not rely on differences in the specificity of effects of prior experience. To qualify as a memory-based judgment, Hastie and Park require that a judgment be correlated with memory as assessed by a test of free recall. For example, they conclude that a judgment of a person's suitability for a job is based on memory only if that judgment is correlated with free recall of items of information favoring or opposing the person. The case for the importance of memory for prior episodes would be strengthened if one found that the conditions that are important for producing memory-based judgments are the same as those that are important for producing very specific effects of prior experience on judgments.

From our perspective, one difficulty with Hastie and Park's distinction is that the source of evidence used to support their distinction identifies memory for prior episodes as a basis for judgments exclusively with an aware use of memory. This is true because it is free-recall performance that is used as an index of the basis for judgments. Even if one should choose a test that requires awareness of memory for prior episodes, there is no reason to think that a test of free recall is the best choice. The use of memory for a prior episode as a basis for judgments might sometimes be more similar to performing on a cued-recall or a recognition test than to performing on a test of free recall. Also, as described earlier, unconscious influences of memory for episodes are sometimes observed. This means that judgments could be based on memory for prior episodes although those judgments did not correlate with performance on recognition or recall tests of memory. Other difficulties arise from the use of correlational data by Hastie and Park to support their claim that judgments are sometimes memory-based. Consider the case in which a very high correlation between a judgment and free-recall performance is found. It is tempting to interpret that correlation as showing

that the judgment was made by free recalling relevant information and then counting-up evidence for and against a judgment. However, the high correlation could have been produced by other causes.

Considering the interpretation of a high correlation between judgment and free recall, there is a way to reject a claim that the correlation arises because people normally free recall as a means of making judgments. This could be done by comparing judgments from subjects in a condition that only made judgments with those from subjects in a condition that both made judgments and free recalled earlier-presented information. The requirement to free recall might change the judgments that are made. If so, one has evidence that when free recall is not required, judgments are not based on implicit free recall. That is, requiring free recall should have no effect if people only instructed to make judgments implicitly free recall earlier information to make those judgments. The procedure amounts to a comparison of judgments in a dual-task condition (judgment and free recall) to those in a single-task condition (judgment alone). Performing the secondary task is expected to have no effect if the requirements of that task are redundant with the way that the single task is performed. Let us further illustrate this dual-task procedure by describing its use to investigate person perception in a proposed series of experiments. The purpose of those experiments is to uncover the factors that determine whether traits or memory for prior episodes will be used as a basis for social judgments.

By most accounts of person perception, inferences about the general traits of others play an important role in social judgments. For example, people might be said to spontaneously think of a general personality trait of a person and use that trait to judge whether or not the person would engage in some particular act. However, social psychologists have learned to distrust general trait descriptors such as *honesty* because traits can be very situation specific. Knowledge about a general, abstract trait is often a less valuable predictor of future behavior than is knowledge of the person's behavior in earlier situations that are very similar to that in which behavior is to be predicted. Also, arriving at decisions about a person's position on different trait dimensions is not so trivial a task as it should be if general traits were always spontaneously inferred when the behavior of others is observed. When asked to evaluate the suitability of a student for admission to graduate school, for example, many of us feel uncomfortable judging whether or not a student is in the top 20% in "industriousness" of students that we have known. The experience is often closer to one of *creating* an opinion about the person with reference to the trait in question than it is to one of simply expressing an opinion that was held prior to the question being asked. The difficulty of producing trait descriptions and the poor prediction afforded by abstract traits calls into question the claim that predictions concerning specific behaviors are typically mediated by inferred traits. It often would seem easier and more accurate to predict a specific behavior from earlier-observed behavior

in similar situations (memory for prior episodes) than to abstract a trait from those earlier observations and then make one's prediction on the basis of that trait.

Phrased on Hastie and Park's (1986) terms, our complaint is that theories emphasizing the importance of traits assume that trait judgments are made on-line (spontaneously inferred), whereas, we suspect that trait judgments are more often memory-based. We plan to use the earlier-described dual-task procedure to determine whether traits are used when predicting specific behaviors. If general traits are spontaneously used, judgments should not change when people are required to engage in the dual task of reporting on a person's general traits as well as judging whether or not the person would engage in a specific behavior. Conversely, if judgments about behavior are typically based largely on memory for prior episodes, then asking subjects to make simultaneous trait judgments should strongly alter the decision process. The goal of our experiments using the dual-task procedure will be to produce interactions involving factors that we think determine the choice between traits and memory for prior episodes as a basis for judgments. The difference between the dual- and single-task conditions should be smallest in conditions that specifically favor making judgments on the basis of traits, rather than on the basis of prior episodes.

We have used the dual-task procedure to ask questions about subjects' monitoring of memory when making judgments (Jacoby, Kelley, Brown, & Jasechko, 1989) and have also used the procedure to separate aware from unaware influences on judgments. When we apply the procedure to investigate the basis for social judgments, we will undoubtedly encounter a number of complexities and difficulties for interpreting the results. A finding of a difference between a dual- and a single-task condition cannot provide conclusive evidence to support claims about mediation. However, evidence of that sort in combination with evidence of differences in the specificity of effects of prior experience can be used to converge toward the conclusion that judgments are based on memory for prior episodes. Also, had we not considered an episodic view, we would not have thought to do the dual-task experiments. Early experiments in that line have returned interesting results that are relevant to issues in addition to that of a choice between theories of categorization.

Effects on Subjective Experience as an Indirect Test

By an abstractionist view of categorization, the making of judgments is a rational, analytic process. One collects pieces of evidence and combines that evidence by some rule to make a judgment. We do sometimes make judgments in that way. However, other times it seems that judgments are based on "first reaction" or "intuition." It is these more nonanalytic bases for judgments that we think are related to memory for prior episodes. After briefly describing evidence to show that memory for prior episodes can produce unconscious influences on

subjective experience, we suggest that effects of that sort can be used as an indirect measure of social judgments. Our description of this line of research is brief because it has been discussed elsewhere (e.g., Jacoby & Kelley, in press; Jacoby & Kelley, 1987; Jacoby, Kelley, & Dywan, 1989).

In our studies of unconscious influences of memory, we found that memory sometimes influences subjective experience. In one experiment (Jacoby, Allan, Collins, & Larwill, 1988), previously heard and new sentences were presented against a background of white noise of varying loudness. Subjects judged the background noise as less loud when the sentences were old rather than new. That is, memory for the old sentences produced an advantage in perception and the difference in the ease of perception of old and new sentences was misattributed to a difference in the level of background noise. In future experiments, we plan to use the noise judgment task to gain a measure of nonanalytic social judgments. For example, the background noise accompanying a statement of a belief might be judged as less loud if one agrees rather than disagrees with the stated belief. The rationale underlying the use of noise judgments as an indirect test is the same as that underlying projective tests such as the Rorschach. One advantage of our procedure over the use of standard projective tests is that judgments of a physical dimension can be easily and objectively scored.

We mention our planned research using noise judgments to illustrate the strategy for contrasting effects as evidence of a difference in bases for judgments. One's first reaction or "gut feeling" about an issue is sometimes very different from the attitude that is expressed in response to a direct question. Similarly, we expect that attitudes as revealed by performance on an indirect test will sometimes conflict with those revealed by performance on a direct test of attitudes. Conflicts are expected if the judgments have different bases. It is likely that directly asking for an attitude often results in the use of a basis for responding that is more analytic than that responsible for a first reaction. Our plan is to test our notions about differences in bases for judgments by seeing whether or not they are sufficient to allow us to produce interesting differences between performance on direct and indirect tests of social judgments.

CONCLUDING COMMENTS

Smith ends his chapter by suggesting that if his arguments have any merit, social cognition faces a series of new and exciting research issues. We agree that an exemplar or episodic view serves as a valuable alternative to the abstractionist view that has dominated theorizing about social cognition. However, we do not think much is to be gained by attempting to use specificity as a "methodological principle" to determine how effects are mediated. There is reason to doubt that any single piece of evidence can be used to determine whether a judgment was mediated by an abstract representation or by memory for exemplars. As dis-

cussed by Barsalou in his comments on Smith's chapter, exemplar and abstractionist theories can be made to mimic one another in ways that make it impossible to choose between them by traditional methods of theory testing. This does not bother us because we have very little interest in testing formal theories in a traditional way. Rather, we are trying to produce a program of research that will show the advantages of thinking in terms of effects of memory for prior episodes. In part, we start by assuming that an episodic view is correct and then use that view to gain a new look at old issues. An episodic view leads one to ask questions and to seek contrasts that have been ignored because of the dominance of abstractionist views of cognition. Similarly, the merit of Smith's arguments do not rest on the possibility of conclusively choosing between theories of representation. The questions about specificity of effects that he poses are important ones. There is good reason to want to know, for example, how effects of stereotypes differ across situations even if those differences cannot be used to choose among formal theories. Indeed, social cognition does face a series of new and exciting research issues.

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