Memory Beliefs as Social Cognition: A Reconceptualization of What Memory Questionnaires Assess

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Few attempts have been made to integrate research on memory beliefs across adulthood with related constructs in social cognition. This article addresses the issue of how respondents formulate answers to memory-beliefs questions from a social–cognitive perspective. We propose that reported memory beliefs represent the outcomes of a process that involves both the retrieval of previously stored information about self and about memory and on-line constructive processes. This article offers a set of assumptions that clarifies existing data on memory beliefs and generates new hypotheses regarding the interactions between beliefs about the aging process, memory, and constructs such as memory self-efficacy and how such variables combine with the on-line constructive processes to produce individual differences in responses.

How good is your memory? How often do you forget names? For over a century, these questions and others like them have been posed to people of all ages, both in everyday and research settings (Cavanaugh & Perlmutter, 1982). That every person can answer them is a given; an extensive literature has emerged attesting to the variety of queries used and the range of responses obtained. How answers are generated and what those answers mean, however, is not at all obvious.

Resolving this issue is important for both practical and theoretical reasons. On a practical level, people's beliefs about themselves and their behavior are viewed as central in many areas of psychology; for example, cognitive theories of depression and cognitive therapies are predicted on the connection between belief systems and behavior (e.g., Beck, Rush, Shaw, & Emery, 1979). Theoretically speaking, understanding the genesis of memory beliefs will lead to the understanding of why people choose particular strategies, perform as they do, or attempt a memory-related task in the first place.

This article addresses memory beliefs from the underlying view that self-evaluative knowledge about memory can be regarded as a type of belief system. The central thesis is that the interpretation of responses to memory-beliefs questionnaires (and the very genesis of these responses) in the adult development and aging literature is greatly enhanced by the use of a social-cognition framework. Such a framework has not been applied previously, which has resulted in increasing difficulty in making sense of apparently contradictory findings. Our argument is presented within a conceptual framework influenced by recent thinking and research in social cognition and in cognitive-process models of self-evaluation. This framework offers a new set of explanations that reconcile the theoretical importance of the memory-beliefs construct with the common empirical finding of modest correlations between scores on memory-beliefs questionnaires and memory-task performance in normal adult populations.

In making our case, we focus most on research relating to developmental changes in memory beliefs across adulthood, primarily because the approach we espouse lends itself especially well to this domain and because many of the ideas we discuss have been researched most in this population.

Our article is divided into three main sections. First, we present our assumptions with brief descriptions of their rationale. Second, we provide support for our view from the literature by discussing the origins of memory beliefs, memory self-efficacy, and several constructs that have been the focus of social-cognition
research. Third, we present suggestions for future research and theory on memory beliefs.

We restrict our discussion to what are termed *memory beliefs* (see also Herrmann, 1982; Sehulster, 1981), which include both self-evaluations of memory performance and beliefs about memory and how it operates. Both are considered to be components of knowledge about the self and others; thus, theories relevant to how such knowledge is (or is not) acquired, stored, organized, accessed, changed, and related to behavior are relevant here. Memory beliefs are components of what have been called *implicit theories* or *schemata* in a variety of domains, such as person perception (Hamilton, 1981), ability (Dweck & Leggett, 1988), and, importantly, the self (Kihlstrom & Klein, 1994; Markus & Wurf, 1987).

Assumptions Underlying Memory Beliefs

Research and theory on memory beliefs and related constructs (discussed in more detail later) represent a fruitful domain from which to draw assumptions about how individuals think about and represent memory, as well as the cognitive processes that influence responses on memory self-evaluation questionnaires. We assume that memory beliefs are the result of complex and reciprocal interactions between stored self-knowledge, prior judgments about memory, affect, and response constructions. The key feature is that responses to memory-questionnaire items are partly the reporting of already-stored information and partly the outcome of on-the-spot constructions (see also Schwarz, in press).

Eight Assumptions About Memory Beliefs

Because we are drawing from two primary but disparate literatures, we believe it is important to describe explicitly the set of assumptions that guide our integration of the memory-beliefs data in the adult-development and aging literature with the social-cognition literature. Our assumptions are grounded in both literatures and reflect well-established principles that we are extending to the memory-beliefs domain. These assumptions form the foundation for our discussion of how responses to memory-beliefs questions are generated, suggestions of how to reinterpret apparent contradictions in the memory-beliefs literature, and priorities for what issues should inform future research. For ease of presentation, we first list the assumptions, and later provide a detailed rationale for and discussion of their implications for a dynamic self-theory of memory:

1. Traces of specific events in one's life, including instances of both remembering and forgetting, are stored in memory. As the literature on autobiographical memory demonstrates (e.g., Rubin, 1986), these memory traces are subject to the same sorts of influences (e.g., forgetting) as any other kind of episodic trace (Barclay & DeCooke, 1988).

2. Summary judgments about oneself are also stored in memory in the form of a complex, interrelated set of propositions about self that define what has been termed a *network of self-schemas* (Sehulster, 1981). These propositions include trait, ability, and other categorical representations. Each has affective connotations, and each is associated with memories of specific events and hierarchically superordinate, general self- and other evaluations. Specific episodic traces may be directly linked to such overall evaluations (see Srull & Wyer, 1989). However, these self-schemata are accessible even when traces of the specific episodes that originally represented the basis for the self-judgment are not. The self-evaluative processes yielding these summary judgments are necessarily influenced by other self-judgments. The judgments form the evidential basis for the more or less flexible response patterns variously termed *conceptual systems*, *category structures*, *implicit theories*, or *personal constructs* in the social-cognition literature (see Sherman, Judd, & Park, 1989).

3. Responses to memory-beliefs questions are constructed from information retrieved from memory (specific episodic traces, schematized propositions, or both) that is subjected to a set of processes for translating the retrieved information into a response of the form and type demanded. Once made, responses may themselves be stored and used as inputs to subsequent judgments on the same or related dimensions (Feldman & Lynch, 1988; Kahne-man & Miller, 1986).

4. Response construction is based on stored information that is accessible at the time of judgment. Depending on the type of question,
individual differences (e.g., in conceptual systems or motive states) and contextual factors (e.g., whether accuracy is stressed) determine the extent to which (or even whether) a response is directly based on a retrieved summary judgment, constructed based on additional processing of accessed prior judgments and episodic traces, or constructed on-line with little if any reliance on stored prior judgments. Both informational input and the form of any transformation process applied are variable (e.g., Feldman & Lynch, 1988; Sudman & Schwarz, 1989). This implies that even though extensive searching of episodic memory occurs under some conditions (e.g., when accuracy is stressed; Kunda, 1990), reconstruction based on existing schematic self-propositions is more likely if the motivation to search episodic memory extensively is not high (Sudman & Schwarz, 1989). Cues contained in the question may influence recall accuracy in the former case (Bradburn, Rips, & Shevell, 1987) or the applicability of given schemas in the latter (Feldman & Lynch, 1988). Which previously made and stored judgments about one’s memory are retrieved in order to answer a particular question, for example, is heavily influenced by the context of the question and one’s personal motivation. Individual differences in judgment processes and in the availability and accessibility of schemas also apply. Thus, the final response to a memory-belief question is a joint function of the availability and accessibility of information in memory, the salience of immediate stimulus elements, the degree to which a given piece of information implies a specific judgment or answer (termed diagnosticity; Feldman & Lynch, 1988), and the relevance and accessibility of a given constructive process or heuristic (Sherman & Corty, 1984).

5. Cognitive economy applies (e.g., Srull & Wyer, 1989); that is, a judgment about memory (like any other behavior) is not made until external demands or active motives require it. Thus, while category frequency or evaluative judgments in given categories may be made automatically (e.g., Bargh, 1989), their occurrence and nature depend on both individual differences and external factors.

6. People are not necessarily aware of either the formation and storage of memory beliefs or in their retrieval and subsequent influence on memory behavior (e.g., Bargh, 1989; Greenwald & Banaji, 1995; Nisbett & Wilson, 1977). Indeed, the lack of awareness of the role of beliefs in behavior is a cornerstone of cognitive-behavior therapy (e.g., Beck et al., 1979). Moreover, these beliefs may be said to form an implicit theory (Dweck & Leggett, 1988) of how one interacts with the world. As collections of beliefs, implicit theories potentially can exert strong influences on cognitive processing and performance. Because there is little evidence that people are aware of their implicit theories, we believe that they, like core beliefs in cognitive theories of depression (Beck et al., 1979), are well instantiated, operate pervasively, and are relatively resistant to change. Indeed, implicit cognition is considered to be a powerful explanation for the lack of a high correspondence between people’s expressed attitudes and their behavior (Greenwald & Banaji, 1995).

7. Both the instances included in specific categories of memory ability or performance (e.g., occasions of forgetting names) and the standards of judgment that apply in a specific case (e.g., the performance standard one uses to judge one’s own ability or performance) may be influenced by the wording of the question (e.g., Barsalou, 1987). For example, questions referring to specific types of failures are responded to differently than questions requiring an overall rating (Cavanaugh, 1987). These data imply that context dependence varies inversely with the degree of category elaboration and the frequency with which a category is used.

8. Affect is both a cause and a consequence of perception and cognitive organization (e.g., Higgins, 1987, 1989). Thus, responses to memory-beliefs questions necessarily have an affective component that influences that generation of the response and that results from making the response. Research and theory on memory in everyday life (e.g., Cavanaugh & Green, 1990) and on intellectual development (e.g., Haviland & Kramer, 1991) show the need for recognizing the interplay of affect and thought.

The cognitive structures based on these assumptions differ in content and are differentially flexible and context dependent across individuals (cf. Barsalou, 1987; Kelly, 1955). In concert with environmental demands, such structures influence self-evaluations of memory. In turn, self-evaluations influence subsequent behavior and the cognitive structures them-
selves. This reciprocity is in part a function of the affect that is inherent in any existing cognitive structure, and is in part due to the affect generated by the judgment processes themselves. In the next several sections, we provide more specific details concerning the foundations for our assumptions.

Perspectives on Memory Beliefs

The set of assumptions just described are grounded in a history of research and theory in both the memory and the social-cognition literatures. In this section, we explicate many of these linkages, provide more detailed discussions of concepts that we consider especially important for our analysis, and use the assumptions and their broader bases to reinterpret findings in the memory-beliefs literature. In this section, we also provide brief overviews of the origins of the memory-beliefs approach in the 1980s and the concept of memory self-efficacy and how it relates to memory beliefs. Most of the discussion focuses on the notions of schematicity and the recall of personal attributes. In the former case, we show how schematicity is a central construct in making self-evaluative judgments and how they are related to memory beliefs. In particular, we argue that there is a development increase in schematicity in memory. As regards the recall of personal attributes, we argue that responses to memory-beliefs questionnaires are based in part on recalling prior judgments about oneself, which is one aspect of personal attributes. Throughout our discussion, we note specific connections between the basic assumptions described previously and these broader constructs from social cognition.

Origins of the Memory-Beliefs Approach

When researchers first began realizing that what one knows about memory makes a difference in the level of subsequent performance, their approach to understanding what that knowledge represented was rather straightforward and simplistic. Many researchers believed that memory knowledge was akin to other "objective facts" and that to perform well on a memory task one simply had to access the appropriate knowledge structures. These facts were assumed to be veridical and to have a direct influence on performance (Kail, 1990; Schneider, 1985).

Sehulster (1981) and Herrmann (1982) rejected this approach. They argued instead that the information respondents provide on questionnaires and interviews is not fact but rather belief. Sehulster (1981), in particular, was quite clear on this point:

Statements such as "I have a good memory for faces" reflect a part of a theory of self. A theory of self is the subset of a person's cognitive theory of the world within and around him [or her] that concerns his [or her] self . . . Although it is for the most part stable, a self-theory, once formed, is by no means a static structure . . . The possibility exists that a person's beliefs about his [or her] memory ability bear faint resemblance to his [or her] actual ability. (pp. 263–264)

Concerning this last point, Sehulster (1981) pointed out that a person may actively resist changing the self-theory, even when this resistance reduces cognitive options (e.g., limits the number of memory strategies one has at one's disposal to use on a particular task). In some cases, people may even deny or distort evidence that points to errors or inaccuracies in the self-theory of memory (see, for example, Chaiken, Giner-Sorolla, & Chen, 1996). To the extent that such distortions exist, one's self-theory of memory becomes less veridical. This is an important point. To the extent that Sehulster is correct, how one goes about establishing the validity of measures of memory beliefs becomes critical, a point we discuss more thoroughly later.

The idea that memory beliefs are part of a self-theory and that such theories guide responding to both self-reports and to situations and events in life to which they are relevant echoes similar views in the domain of category construction and use (e.g., Murphy & Medin, 1985) as well as self-concept (e.g., Kihlstrom & Klein, 1994). It also allows us, by analogy, to hypothesize that self-relevant memory judgments should show the pattern of dynamic construction and context responsiveness observed in the study of human categorization (e.g., Barsalou, 1987) and that people will show the same pattern of differential elaboration of concepts about memory as they do in other domains (Kelly, 1955; Markus, 1977).

Herrmann (1982) laid the groundwork for research aimed at understanding memory beliefs. Like Sehulster, Herrmann concluded that
self-evaluative questions about one's memory ability assessed beliefs, not veridical knowledge. Herrmann argued strongly for additional research for an important reason:

If memory beliefs affect strategy selection and use, inaccuracy in beliefs will lead to use of strategies that are less than optimal or even inappropriate to the task at hand. The moderate validity coefficients reported here are consistent with the view that memory beliefs guide performance but not always in an appropriate manner. (p. 448)

Again, it is clear that memory beliefs of any sort have the potential to influence subsequent performance, but not necessarily in a direct or isomorphic way. Indeed, one of the challenges confronting research on memory beliefs is how to account for and incorporate memory beliefs that are sometimes accurate and used to guide performance as well as those that are false or are not acted upon.

**The Concept of Memory Self-Efficacy**

Early efforts to document memory beliefs focused primarily on the construct labeled memory self-efficacy. Memory self-efficacy can be defined as a set of beliefs about one's capability to use memory effectively in various situations (Bandura, 1986, 1989; Berry, West, & Dennehey, 1989). As such, memory self-efficacy can easily be differentiated from declarative knowledge about memory mechanisms and processes (e.g., Hertzog, Dixon, & Hultsch, 1990a). Generic memory knowledge can be considered as a set of representations or propositions about how memory functions, such as which intentionally activated cognitive processes are more or less effective in aiding remembering. Although both memory self-efficacy and generic memory knowledge are fallible representational systems of propositions about memory, the crucial feature differentiating them is personal agency (i.e., effective use of memory) in various contexts and situations. For example, one may know that certain strategies typically improve memory (i.e., rote rehearsal, organization at encoding) both in general and for oneself, and simultaneously believe that one is an ineffective rememberer. Although it seems plausible that those individuals with the greatest knowledge about memory functioning ought also to have optimized their remembering, thereby leading to a concordance among knowledge, actual memory ability, and memory self-efficacy, this is not necessarily the case. As social psychologists have repeatedly shown, beliefs about the self are not necessarily based on the logical, ordered outcomes of rational self-evaluative processes (Schwarz, in press). The advantage of differentiating generic memory knowledge from memory self-efficacy is that it allows for the possibility that an individual may have extensive and accurate knowledge about how memory functions but believe that his or her ability to remember in a given context is poor (see Assumptions 4, 6, and 7). For example, older people may believe that they are inevitably victims of the ravages of aging, and that loss of memory functioning will occur despite any effort on their part to maintain their memory skills (Cavanaugh & Morton, 1988).

An additional advantage of memory self-efficacy is that it provides a unifying framework for relating memory complaints and memory ratings (Assumptions 2, 3, and 4). According to memory-self-efficacy perspectives, both complaints about and ratings of one's memory stem from the same beliefs about the self as rememberer (Hertzog, Hultsch, & Dixon, 1989). Thus, if memory self-efficacy is the common determinant of both frequency of forgetting judgments and memory self-ratings, then they should show strong convergent validity when subjected to simultaneous factor analysis. This is indeed the case (Hertzog et al., 1989).

Self-efficacy has both general and situation-specific components (Bandura, 1986). Overt instruction and recent personal experience, as well as long-term impressions, mediate one's conception of one's own ability to perform in a particular situation (Assumptions 2, 3, and 7). Thus, self-efficacy for any given task is a function of how that particular task is categorized, which is in turn a joint function of contextual and task cues mediating task-category accessibility, the nature of the category representation, and chronic category accessibility. Self-efficacy reflects a judgment about the person–task interface based on an interpretation (self-evaluation) of how task demands and personal ability match.

Bandura (1986) argued that high self-efficacy acts as a source of motivation or task persistence even in the face of the negative affect that may accompany some tasks, thereby permitting people to maintain or even improve perfor-
metamemory as process

In contrast, low self-efficacy does not provide this source of persistence, thereby lowering performance. Unfortunately, relatively little research has examined these hypothesized moderating effects (Hertzog, 1992); however, they are certainly consistent with similar notions discussed in the child cognitive-development literature (e.g., Borkowski & Muthukrishna, 1992). Elliot and Church (1997) illustrated a similar interaction between chronic motives and self-efficacy perceptions, which influence task interest and performance via self-set goals.

schemacity and self-evaluative judgments

Markus's (1977) concept of schemacity refers to traits and other concepts that are highly elaborated components of the self-concept, or, alternatively, are central constructs in a theory of people, including the self and others. The concept of schemacity is related to (a) constructs such as chronic accessibility as applied by Bargh (1989, 1990, 1994) to person concepts and motives, (b) automaticity of stereotyping as described by Devine (1989) and automaticity of attitudes as studied by Fazio (1989), and (c) elaborated values and expert knowledge as used by Feldman and Lynch (1988) and as discussed by Eagly and Chaiken (1993) under the rubric of values and ideology. The central idea in all these treatments is that individuals differ in the concepts they habitually and automatically use to characterize themselves and others, as well as to energize and structure their behavior (see, for example, Bargh & Barndollar, 1996; Bargh, Chen, & Burrows, 1996; Chaiken et al., 1996). Information processing in schematic domains is more efficient, and conflicting information is elaborately, sometimes defensively, processed (Chaiken et al., 1996; Kihlstrom & Klein, 1994). (These points are related directly to our Assumptions 2, 4, and 6.)

For simplicity, we use Markus's (1977) label schemacity in subsequent discussions. In her original research, respondents were classified as schematic with respect to a trait concept (e.g., extrovert) if they rated the concept as both self-descriptive and highly important. We contend that this procedure might be extended to other domains (e.g., good rememberer) with no loss of meaning. Furthermore, we do not assume that the concepts chronically influencing judgments and behavior must be available to consciousness at any given moment (Bargh & Barndollar, 1996; Bargh et al., 1996); it is sufficient to say that they influence relevant judgments (e.g., of self-descriptiveness) reliably enough to allow those responses to serve as indicators of their presence.

People who do not exhibit a schematic pattern of self-descriptive judgments are said to be aschematic, meaning that the concept is (in our terms) less chronically accessible, less elaborated, and less affectively charged. Thus, while people can use concepts on which they are schematic to evaluate themselves and others, the concept is likely to: (a) require direct questioning or some accessibility-increasing manipulation and (b) demonstrate a high level of context dependence in its use.

schemacity and memory beliefs

One clear example of the connection between schemacity and memory beliefs can be seen in research on adults (and Assumptions 2, 4, and 8). Cavanaugh, Grady, and Perlmutter's (1983) finding that older adults report higher levels of affective response to memory failure than do young adults, even when the personal importance of the to-be-remembered information is controlled, suggests that older adults may be more schematic with respect to memory decline. Because memory failure is part of a common self-theory of aging, one could expect older adults to have elaborated the concept, to be more likely to access memory-failure concepts given appropriate circumstances, and to make dispositional evaluations relative to young adults (cf. Higgins, 1989). Likewise, Cavanaugh (1987) reported high correlations among older adults' self-ratings of memory across several domains, consistent with the idea of memory schemacity increasing with age.

If one assumes that many older adults are schematic regarding memory and memory loss, then a parsimonious explanation for seemingly contradictory findings in the literature on age differences in memory beliefs can be offered. Cavanaugh et al. (1983), Cavanaugh and Morton (1988), and Dixon and Hultsch (1983) all reported that older adults claim that having a good memory is important to them, rate themselves as having an adequate memory, but still report more instances of memory failure.
than do younger adults. This pattern is exactly what would be predicted if older adults had a chronically accessible, affect-laden construct for memory (see Assumption 2).

The cognitive structures and processes characterizing individuals who are schematic for a specific trait are much like those of the expert in a given domain. With affective-category polarization, such individuals may also be said to have long-term or trait involvement in the domain (Feldman & Lynch, 1988), similar to people with well-developed value systems and ideologies (Fischoff, Slovic, & Lichtenstein, 1978). A knowledgeable, personally involved individual would be likely to attend to domain-relevant information automatically, be capable of accurate analytic and intuitive processing, organize material in memory around the schematic (accessible) construct (which facilitates retrieval), process impression-inconsistent information more elaborately (which facilitates interbehavior associations), generate evaluations automatically (which increases the causal influence of attitude on behavior), have context-independent judgment standards and well-developed abstract-category representations, and be less susceptible in general to contextual influences on judgment (e.g., Feldman & Lynch, 1988; Srull & Wyer, 1989; see Assumptions 2, 4, 5, and 6). Indeed, this speculation provides an important topic for research examining schematicity in memory beliefs.

Schematicity and the Effect of Context on Judgments

Although the expertise and high-personal-involvement characteristics of schematicity reduce the impact of context, they do not eliminate it. People can consciously create categories from perspectives other than their own habitual ones (Barsalou, 1987) and suppress or override automatic responses if the situation or processing goal demands it (Bargh, 1989; Kunda, 1990). Even experts' judgments can be influenced by manipulations that increase or reduce category accessibility (Fischoff et al., 1978). Experts are also susceptible to context effects such as priming when they are asked to make novel or unpracticed judgments (Bettman & Sujan, 1987), due perhaps to the domain specificity of the hypothetical underlying processing structures (see, for example, Smith, 1994; Assumptions 4 and 7). However, influencing an expert's judgments typically is not easy. In particular, the suppression of automatic responses demands considerable effort on the respondent's part, which he or she may not be willing to exert. This may be especially true of older adults, who are unlikely to alter habitual patterns of memory processing even in the context of training unless there is a good reason to do so (Cavanaugh & Green, 1990; see Assumption 5).

Context effects also result from different motivations, that is, the motivation to be accurate as opposed to the motivation to arrive at specific conclusions (Chaiken et al., 1996; Kunda, 1990). In particular, the strategies for accessing, constructing, and evaluating beliefs, even for individuals who are schematic with respect to a specific trait, may differ as a function of the contextual motivation. This point becomes especially important in understanding apparent inconsistencies in responses to memory-beliefs questions having different wordings (cf. Cavanaugh, 1987; see Assumptions 5 and 7). We return to this issue later when we discuss how memory-beliefs questions are answered.

Schematic self-conceptions develop in part from salient differences between the self and others, causing specific categories to be formed and self-judgments to be made. But contextual (e.g., affective) differences between the self and others may temporarily influence self-judgments (see Assumption 8). For instance, the novelty of answering certain types of questions about memory may render a particular category accessible, influencing causal and categorical judgments of the self in the same way that novelty (or other attentional manipulations) influences judgments of others (Taylor & Fiske, 1978). Rendering certain discrepant aspects of the self temporarily accessible (via priming or questioning procedures; see Assumptions 4 and 7) qualitatively influences one's experienced emotional state just as schematic self-ideal or self–other discrepancies are associated with chronic emotional states (Higgins, 1987, 1989; Markus & Wurf, 1987). Research on memory beliefs has yet to address the issue of how people reconcile discrepant beliefs about their memory (e.g., believing that one's memory has deteriorated but is still superior or equal to younger adults' ability).

Suppose, however, that a person is not
schematic in a particular arena, perhaps because the individual has little personal interest or stake in it. According to Markus and Wurf (1987), in such domains the malleability of the self-concept is even more pronounced. As detailed in Feldman and Lynch (1988), the unavailability or inaccessibility of concepts directly relevant to situationally demanded judgments does not stop people from making these judgments. Instead, they are constructed based on the accessibility and diagnosticity of constructs and episodes that are available, such as generalized affective responses or self-evaluations and general processing heuristics. Requiring or motivating individuals to make a specific judgment when no prior judgment is accessible renders the current judgment highly susceptible to context-mediated accessibility effects (e.g., Higgins, 1987, 1989). For memory domains in which a person is nonschematic, responses to memory-beliefs questions may largely be determined by the format and wording of the item. Indeed, one could estimate schematicity of memory beliefs by examining whether responses to the same memory-beliefs questions change as a function of instructional or other context manipulations (a point related to all of our assumptions).

The same logic can be applied to judgments in which no accessible, highly elaborated evaluative standard of judgment exists. Specifically, the norm chosen as the basis for the evaluation is susceptible to context effects, such as contrast. For example, evaluative judgments about one's memory ability in a nonschematic domain could be driven by changing the reference group (e.g., comparing oneself to younger adults vs. older adults) or the performance standard against which one's own performance is judged (e.g., perfect performance vs. something less that is acceptable). Furthermore, without a substantial knowledge base, context effects are likely to change the actual memory representation of the judged object rather than simply the use of the rating scale (Lynch, Chakravarti, & Mitra, 1991). In fact, if a new trait or category judgment is formed and is schematically rehearsed, it may become increasingly polarized (e.g., Chaiken & Yates, 1985), influence subsequent retrieval from memory (Ross, McFarland, Conway, & Zanna, 1983), and be relatively resistant to contradictory information, even to instructions to disregard earlier input (Srull & Wyer, 1989). Interpersonal or task behavior influenced by such judgments may cause confirming feedback, resulting in a relatively permanent change. Langer (1989) discussed similar effects in other areas, and Cavanaugh and Morton (1989) described parallel issues in the memory-aging domain.

In sum, schematicity provides a way to understand current findings from memory-beliefs research and to pose specific hypotheses about how individuals should respond in certain situations. As we later show, these hypotheses form one of the bases for our research agenda.

Recall of Personal Attributes

Answering questions that assess memory beliefs requires that one take previous beliefs into account prior to answering the item. In the social-cognitive literature, this step is referred to as the recall of personal attributes. Ross (1989) argued that recall of personal attributes is a two-step process: (a) determining one's present status on the attribute in question and (b) invoking an implicit theory of stability or change over time in order to make a judgment. The concept of an implicit theory, in this case, refers to a fundamental set of schematic beliefs or propositions regarding the nature of the attributes in a specific reference population. Memories of specific events that are consistent with one's beliefs or implicit theories are more accessible and have greater influence on the judgment, which is in line with our arguments concerning chronically accessible schemas. Moreover, as the length of time between the actual event and the time of retrieval increases, the more that the retrieval of event memories depends on reconstruction processes that are influenced by one's implicit theory (see Assumption 1). This reconstructive process can produce biases in recall and in self-referent judgments, given that present functioning serves as a benchmark for retrospective judgments. Such biases exist even when current status is deemphasized (e.g., Ross, 1989).

Ross argued that one's implicit theory has both shared and idiosyncratic components, and reflects one's personal experiences. There is evidence in the gerontological literature (relevant to Assumption 2) that beliefs about memory ability are quite similar, irrespective of
whether individuals are rating unspecified age-graded targets or themselves (Ryan, 1992; Ryan & Kwong See, 1993). Ryan’s research included two different questionnaires aimed at examining respondents’ beliefs about memory as a function of one’s own or an unnamed target’s age. Ryan’s findings are consistent with the view that implicit theories about memory change in general influence self-reports of one’s own memory ability and memory change (which is also in line with Assumptions 3, 4, and 5). Additionally, the findings support the apparent influence of general beliefs on individual self-efficacy beliefs and memory performance and provide ways to integrate cognitive and social–cognitive approaches. However, the data do not constitute direct causal evidence that implicit theories drive self-evaluations; one could expect that the average self-report (aggregated over people) should converge with the rating of the average person, given accurate person perceptions. The potential advantage of the implicit-theories approach is that it can enable the theorist to go beyond aggregate similarity in ratings of self and other by making specific, testable predictions about how the implicit theory of the individual ought to, under certain circumstances, drive self-judgments about memory.

In terms of memory beliefs, Ross’s view suggests that implicit theories about memory over the adult life span, for example, reflect various combinations of personal beliefs about the ability in question, how likely it is that the ability changes, and the context in which the judgment is made. For example, Cavanaugh and Morton (1988) found that some older adults expressed strong opinions in favor of changes in memory with age, but simultaneously stated that such change was outside of their control and that nothing they did would make any difference (in keeping with Assumptions 2, 3, 4, and 7). Decoupling the notions of malleability, controllability, and improvement leaves open the possibility that perceived changes in memory ability over time could be either positive or negative.

In order to be able to make specific predictions about the relationship between implicit theories and self-judgments about memory, researchers must consider several issues. First (and related to Assumption 7), to the extent that one’s implicit theory about memory and aging reflects one’s own personal history, personal recall of prior judgments about one’s memory ability will be relatively more accurate (Jussim, 1991). Second, implicit theories presumably will be invoked at the time of retrieval if they are accessible, deemed relevant, and appear credible. Thus implicit theories will not inevitably influence judgments (Assumption 4); instead their influence will depend on whether the context and framing of the judgment lead to their activation. Third, implicit theories are less likely to influence retrieval if specific event memories are easily accessed or when respondents are forced to retrieve specific details of events (Assumptions 1, 2, and 3). Fourth, consistent with research on controlled versus automatic responding in judgment, one could expect implicit theories to have a greater influence on self-judgments under cognitive load or distraction, when processing capacity is diminished or attentional resources are focused elsewhere (e.g., Eagly & Chaiken, 1993), simply as a function of these theories’ typically greater accessibility and sufficient diagnosticity (Assumptions 4 and 5). Finally, if invoked, implicit theories may bias judgments in one of two ways: (a) by being used instead of task-specific information such as retrieved episodes of past performance (Assumptions 4 and 7) or (b) by biasing encoding of and inference from currently accessible information (cf. Eagly & Chaiken, 1993). When individuals are faced with queries (generated personally or prompted by questionnaires) that require comparative judgments concerning one’s ability at two different points in time, such judgments are typically biased in favor of consistency (e.g., Ross, 1989); people tend to underestimate the degree of true change that has occurred over time (see also Assumptions 2, 3, and 4). Individuals tend to view their current personal attributes as emerging logically from the past in one connected path, even if the events are actually unrelated (Cavanaugh, 1991; Kagan, 1980); people tend to impose coherence on event sequences even when evidence supporting such a view is lacking.

Conversely, individuals may also overestimate the degree of change that has occurred if one assumes that certain attributes normally change over time more than they actually do (see also Assumptions 2, 3, and 4). For example, many adults believe in the concept of life stages
or passages, and perceive that they experience fundamental change in some attributes across adulthood, even though there is objective evidence to the contrary (e.g., Costa & McCrae, 1980). In terms of memory beliefs, implicit theories that postulate age-related decrements in memory ability may be translated into self-judgments of declining performance, even in light of objective evidence to the contrary. Moreover, such implicit theories may also lead to inflated ratings of ability earlier in life (see Cavanaugh & Morton, 1988). McFarland, Turnbull, and Giltrow (1988) reported that older adults rate themselves as healthier and as having a better memory at age 38 than a group of 38-year-olds rate themselves currently. More important, McFarland, Ross, and Giltrow (1992) showed that implicit theories of aging concerning personality traits, not the perceived positive-ness or negativeness of the trait, directly influenced people's retrospective reports of previous status on them compared with their current status. Specifically, if older adults believed that a trait normatively declines with age, they rated themselves as being higher on the trait in the past compared with the present. Conversely, if older adults believed that a trait increased with age, they rated themselves more highly on the trait at present. Like McFarland et al. (1988), McFarland et al. (1992) found that neither retrospective report agreed with at-present ratings made by a young-adult comparison group. Even taking into account the possible influence of cohort effects in these cross-sectional studies, these data are consistent with an interpretation based on biased recollections due to implicit theories of aging. It is clear that when older adults are asked to estimate the amount of change they have experienced in a particular domain (e.g., memory), their ratings are directly influenced by their underlying implicit theory of aging concerning that domain (Assumptions 2, 3, and 4). The implication for memory-beliefs research is quite clear: unless one has queried respondents about their implicit theory of memory and aging, the self-rated change data are essentially uninterpretable because they have been aggregated across discrepant (and mutually exclusive) implicit theories.

Data from the Victoria Longitudinal Study reported by McDonald-Miszczak, Hertzog, and Hultsch (1995) reinforce the concern that scales measuring self-reported change (e.g., Metamemory in Adulthood—Change; Dixon, Hultsch, & Hertzog, 1988) are influenced by implicit theories of change. They analyzed 6-year longitudinal data on memory performance, memory self-efficacy, and perceived change. Cross-sectional data from this sample produced large age differences in the Change scale; older adults rate themselves as having declined more in memory. The longitudinal data were not consistent with the view that change perceptions are accurate, however. McDonald-Miszczak et al. (1995) found that actual 6-year longitudinal changes in memory performance did not correlate substantially with retrospective perceived change in memory. Moreover, longitudinal changes in memory self-efficacy, as measured by the Metamemory in Adulthood—Capacity scale, did not correlate as highly with ratings of change in memory ability as they did with longitudinal change in the ratings of change. Apparently, temporally inconsistent influences that caused variability in ratings of current memory ability also influenced ratings of memory change, as would be predicted by Ross (1989; see also Assumptions 3 and 4).

McDonald-Miszczak et al.'s (1995) results have important implications for interpretation of the typical finding of large age differences in memory change. This finding is often taken as evidence of accurate monitoring of memory ability when judgments are anchored against oneself; it is assumed that, by using one's prior level of memory ability as an anchor, one can accurately assess the relative degree of change. The memory-beliefs perspective offered here suggests an alternative view: Implicit theories about change and beliefs about current status drive judgments about change that may not be accurate reflections of true intraindividual change in memory. Age differences in self-rated change may be in one sense an artifact of implicit theories about how aging affects memory.

Ross's analysis can also be applied at a more basic level. Those who believe that an ability is malleable may also possess ideal-self schemas (Higgins, 1987, 1989) or characteristic motives (Dweck & Leggett, 1988; Elliot & Church, 1997; James, in press) that emphasize the rewards of effort and persistence instead of (or in addition to) good task performance. Such views may be associated with chronically accessible task schemas that contain internal-
control beliefs. In contrast, people who believe that abilities are more fixed show internal control, high self-efficacy, and corresponding positive affect toward the task only when self-perceived ability is high or success feedback is received. When the task is ambiguous or unfamiliar, people toward the fixed end of the continuum are likely to respond to ability versus chance cues or other accessibility manipulations. People holding malleability views, in contrast, should show high self-efficacy, internal-control attributions, and positive affect across a wide range of tasks and feedback conditions, and should be less responsive to contextual manipulation (see also Assumptions 2, 3, and 4). Other important issues, such as whether implicit theories change across the life span and the degree to which implicit theories of memory are task or situation specific, remain to be investigated.

Translated to memory-beliefs judgments, these points imply that people with fixed-ability views are likely to perceive evidence for memory failures as a reflection of a pervasive problem that cannot be remediated, resulting in rather pessimistic self-evaluations (Elliott & Lachman, 1989). On the other hand, people with views that memory abilities are malleable may perceive memory failures as remediable, and may be less likely to base their self-evaluation on such failures. That is, they may be likely to provide rather positive evaluations despite personal evidence of forgetting.

This analysis supports the benefits stemming from perceptions of control and optimism in that one’s belief in the changeability of an ability coupled with a perception of control, even if illusory, will result in increased performance and positive outcomes most of the time (Levy & Langer, 1994; see Assumptions 2, 4, 7, and 8). Thus, control training (Borkowski & Muthukrishna, 1992) or situations that make control perceptions more accessible (e.g., Cornelius & Caspi, 1986) promote adaptive behavior. Even if control perceptions cannot be made chronically accessible, providing contextual cues that increase the accessibility of relevant self-schemas (e.g., by causing people with entity theories to perceive tasks as depending on abilities they believe they have in abundance) or that change the evoked norms to create a belief in high ability (e.g., by providing specific standards of judgment) would create benefit (e.g., in the social domain, see Bargh et al., 1996). This implies that the construction of memory-beliefs questionnaires should be undertaken carefully. This most likely would entail assessing controllability attributions for each item during the scale-development process. Additionally, training programs need to be sensitive to these issues.

Memory Beliefs as Social Cognition: Implications for Future Research

We have built a case that several concepts in the social-cognition literature provide descriptive and explanatory approaches for findings in the memory beliefs literature. In our final section, we summarize the current state of measures of memory beliefs and offer a brief overview of the types of research we believe should be undertaken.

The assumptions regarding the nature of memory beliefs and their expression in a variety of assessment contexts can be used to create a research agenda to address key aspects of our approach. The two most important for the present discussion are measurement issues and the role of schematicity. In our view, two aspects of measuring memory beliefs should be addressed first: how validity is assessed and how question type influences responses. Gaining insights into these issues will then allow a key issue concerning schematicity to be addressed: how schematicity influences people’s responses to memory-beliefs questions. Because we believe the measurement issues are more central, we consider them first.

Measurement Issues

A fundamental and long-standing concern is how well memory beliefs can be measured. Although concerns about the quality of measures was well founded in the early 1980s (Herrmann, 1982), considerable evidence now supports the conclusion that sound measures exist. Of these measures, two have been the focus of extensive psychometric analysis: the Metamemory in Adulthood Instrument (MIA; Dixon, Hultsch, & Hertzog, 1988) and the Memory Functioning Questionnaire (MFQ; Gilewski & Zelinski, 1988). Both inventories have been subjected to extensive scrutiny, with considerable evidence of high internal consis-
tency for all subscales (e.g., Dixon et al., 1988; Gilewski, Zelinski, & Schaie, 1990).

The degree to which measures demonstrate validity is central to the issue of measurement of memory beliefs. The point is controversial. On the one hand, predictive validity, examined by using the inventories to predict memory performance, is consistently moderate at best (e.g., Berry & West, 1993; Cavanaugh & Perlmuter, 1982; Hertzog et al., 1990a, 1990b). The principal exception to this is the Memory Self-Efficacy Questionnaire (Berry et al., 1989), which shows much stronger predictive validity in at least some studies (West, Dennyh-Basile, & Norris, 1996). In contrast, evidence for construct, convergent, and discriminant validity is much broader and stronger (e.g., Cavanaugh & Baskind, 1996; Gilewski et al., 1990; Hertzog, Dixon, Schulenberg, & Hultsch, 1987). For example, Hertzog et al. (1989) used confirmatory factor analysis to demonstrate convergent validity between corresponding scales of the MIA and MFQ. Equally important, confirmatory factor analyses show that the memory-beliefs factors derived from these questionnaires are distinct from other aspects of beliefs and attitudes, such as neuroticism, social desirability, and locus of control (Hertzog et al., 1990a).

The use of confirmatory factor analyses for evaluating issues of validity has two implications for research. First, confirmatory factor analyses put memory-beliefs questionnaires on equal footing with other scales requiring self-evaluations as measures of aspects of the self. Second, they support the view that these scales provide meaningful information about underlying beliefs, a key focus of study in its own right.

However, a separate issue remains unaddressed in extant research on memory beliefs. Memory-beliefs questions are typically of two types: frequency estimation and ability–quality judgments. Although people can construct the information in their responses on-line (our Assumptions 4 and 5), many responses are based on information (judgments) that have been stored previously (Assumptions 1, 2, and 3), but which are subject to cognitive (Assumptions 6 and 7) and affective influences (Assumption 8). At present, little is known about how question type influences responses to memory-beliefs questions (Jobe & Herrmann, 1996).

In the case of frequency-estimation items, people’s answers tend to be constructed through the use of cognitive heuristics, or general strategies for retrieving information. In the case of frequency-estimation questions, three heuristics are used most often to shape the answer: availability (only information that is easily available to be retrieved influences the response), accessibility (only information that is easily accessed influences the response), and representativeness (the information is considered reasonably representative of the kind of events in question; e.g., Conrad & Brown, 1996). Likewise, both temporary and chronic affective states (such as concern, anxiety, depression) influence recall by making the retrieval of affect-congruent behaviors and events more likely (Cavanaugh, in press). The interpretation of the relative meaning of the response scale (i.e., sometimes, often, rarely), which may be subject to context effects, must also be considered. To the extent that people’s definitions of these subjective response-scale terms differ, it becomes difficult to compare results. To date, little systematic research has investigated people’s subjective definitions of these terms in the context of memory-beliefs questionnaires, nor how these definitions may differ with age.

Ratings of memory ability or quality are generated differently. For example, overall self-evaluations that have been stored previously are likely to be highly accessible and diagnostic for other evaluative judgments (Feldman & Lynch, 1988). If specific judgments are unavailable or inaccessible in the domain being examined, such global evaluations may well provide either direct input into a self-evaluation or may be integrated with easily recalled memory episodes. This is most likely to happen when the person has never been asked the question previously, or does not remember being asked. However, if specific and diagnostic judgments are sufficiently accessible, they will be used to generate the inference. For example, if a person has been asked the same or very similar question before (e.g., “How well do you remember names?”), the individual could simply retrieve the previous answer and give it again. In either case, a representativeness heuristic operates, cued by the form of the question. For example, one does not retrieve and use responses to completely different ability questions (e.g., “How well do you remember
historical facts?"") when creating a response to the question, "How well do you remember names?" Additionally, as discussed previously in this article, implicit theories may influence the diagnosticity of more general self-evaluations.

In sum, it is apparent that some measures of memory beliefs have strong psychometric properties. However, the same careful examination of the effects of cognitive heuristics, as a function of question type, must be conducted on these measures as has been done on related personality and attitude scales (Cavanaugh, in press). Such investigations may also provide improvements in predictive validity as a result of better understanding of the measures.

Schematicity and Questionnaire Responses

Recall from our discussion of schematicity that as individuals vary along this dimension, answers to memory-beliefs questions are more or less susceptible to context effects. In domains in which respondents are schematic, responses may reflect the relatively straightforward reporting of stored beliefs that have accrued over time in response to previous situations requiring self-evaluations (Assumptions 1, 2, and 3). In other cases, however, questionnaires may influence the construction of the beliefs they are intended to measure (Feldman & Lynch, 1988). Such on-line construction is most likely in situations involving self-evaluations in domains in which the respondent is not schematic (Assumption 4).

Consider the case of a person who has previously formed highly accessible, elaborated judgments of the self as rememberer in many domains (e.g., remembering names, use of strategies, etc.). In these schematic domains, instances of certain types of memory lapses are likely to be centrally organized, making them readily retrievable. However, other memory-related domains may exist in which the individual has relatively little knowledge and low personal investment—that is, is not schematic. In this case, episodes are not readily categorizable or retrievable. Questions about these domains force the individual to search memory, as influenced by cues in the context or the questions themselves, and rely on implicit theories or estimation heuristics (discussed subsequently) to respond. Indeed, data on older adults reported by Cavanaugh et al. (1983), Cavanaugh and Morton (1988), and Cutler and Grams (1988) support these ideas; in each case, intraindividual (as well as interindividual) differences in the subjective importance of specific memory domains were quite apparent. Events in some domains (e.g., remembering names) are extremely accessible, whereas others (e.g., remembering details) are not. Although there are hints that schematicity may be related to affect (e.g., Cavanaugh et al., 1983), little systematic research has examined this issue.

In essence, direct evaluative judgments of memory performance are driven by the relative accessibility of categories or self-evaluations (Assumption 3). Unfortunately, the precise content of the judgment is hard to specify because there are substantial individual differences in personal-construct systems (Kelly, 1955). People simply vary in their conceptual definitions of constructs. For example, if two people are schematic with respect to the concept of intelligence, one person's construct may include memory whereas the other person's does not (e.g., Rips & Conrad, 1989). If the former person were asked for a memory self-evaluation, it would be influenced by an existing intelligence judgment, perhaps integrated with accessible instances of memory performance (Anderson, 1981); the latter person might base the same judgment on an overall self-appraisal. In Feldman and Lynch's (1988) terminology, the existing intelligence judgment would be diagnostic for the first person's response, but not for the second person's. This implies that understanding people's conceptions of the constructs under investigation is essential for understanding what their responses to questionnaire items mean.

Following this line of reasoning, an important line of research would be to identify what people's personal definitions of memory are and map them onto memory-beliefs questionnaires. If people's definitions do not match the domains included in existing memory-beliefs questionnaires, additional scale-construction work would be necessary. In any case, researchers need to begin taking respondents' definitions of constructs into account in order to make better interpretations of questionnaire responses, a point emphasized by psychometricians. To date, memory-beliefs questionnaires are grounded in a priori categories generated from the researchers' perspectives. Clearly, a match between the
respondents' definitions and the questionnaires' categories is important in order to test our ideas about schematicity.

Standards of judgment may also be affected by contextual factors contained in the questionnaire, such as the instructions or response alternatives provided, which may well create a different self-representation in the memory domain than would otherwise be the case (Assumption 7). For example, it is common in the personality literature to use the same item stems to assess both state and trait aspects of a construct such as anxiety, with the difference being in the time frame provided in the instructions to be used in making the judgments (e.g., "right now" vs. "on average over the past month"). These contextual manipulations have yet to be done systematically in the memory-beliefs literature. For example, systematic investigations of alternative comparison groups (e.g., "compared to other people your age [younger than you, older than you]" or similar sets) are likely to reveal different response patterns within and between individuals. Understanding respondents' standards of judgment is also essential for investigating the role of schematicity.

These points suggest that schematic individuals should recall more instances of memory performance, that their recall would be faster and better organized, that self-evaluations would be made more quickly, that context effects such as item content and contrast phenomena should be less powerful, and, if present, should only influence scale responses and not self-representation (Lynch et al., 1991). They also suggest that much of the individual differences in people's responses on memory-beliefs questionnaires may be accounted for by differences in schematicity, and that survey formats designed to increase recall and prompt memory search would have a greater effect in schematic than in schematic subgroups (cf. Sudman & Schwarz, 1989). Manipulations of construct accessibility and norm construction would likewise be expected to influence both scale responses and representations less in schematic than in schematic subgroups, due to the accessibility of diagnostic judgments and relevant episodes in memory.

Such predictions are conditioned on the strength and type of contextual manipulations, however, insofar as expertise or schematicity does not preclude context effects under all conditions (e.g., Krosnick & Schuman, 1988). Furthermore, the influence of specific task performance on self-evaluations may take a different form in individuals who are schematic on the domain being examined. Because an overall impression already exists for these people, performance contradicting the impression may be attributed to external and unstable causes. This hypothesis could be tested either by presenting difficult tasks to individuals with highly positive self-evaluations of memory, or by presenting false feedback on performance (e.g., telling people that they performed much worse than they actually did). Resistance to the notion that such individuals are to blame for poor performance as indexed through stable attributions and self-beliefs would be consistent with the view presented here. Evidence for stability of at least some aspects of memory self-efficacy beliefs reported by McDonald-Miszczak et al. (1995) is consistent with this view.

There are several implications of these speculations for research on memory beliefs. Most important, the validity of the schematic-belief model and the self-generated belief model need to be established in the context of memory beliefs. Additionally, the relative contributions of each to the explanation of how people respond to self-evaluative questions about memory ability need to be discovered. A second major area of research should be the discovery of the standards of judgment adults use when asked to make self-evaluative judgments about memory. Because of the critical role standards play in providing an interpretive context for this area, establishing what they are and the conditions under which they can be changed or manipulated is essential for understanding the role of memory beliefs in memory performance.

In sum, the concept of schematicity forces a recognition that individuals do not interpret or respond to memory-beliefs questions in the same way. Rather, there are systematic differences that can be identified based on how people view themselves on the domain being assessed and on how personally important they consider that domain for themselves. Recognition of these differences clarifies why results from memory-beliefs-questionnaire studies are sometimes contradictory; different samples may have differential representation of schematicity across
participants. Moreover, as we have shown, several specific predictions can be made based on schematicity. Unfortunately, we are aware of no studies that have directly addressed this issue; thus, we believe that proposing such predictions is itself a major advance in memory-beliefs research.

Summary and Conclusions

We have argued that responses to questions requiring self-evaluations of one’s memory (i.e., assessing memory beliefs) are best interpreted within a social-cognition approach. Current theoretical discussions and research on memory beliefs converge on the conclusion that memory beliefs represent one aspect of a dynamic self-theory. We proposed eight assumptions that provide a stronger foundation for interpreting memory-beliefs data and framing specific recommendations for future research in these areas.

In conclusion, we believe that viewing memory beliefs as a social–cognitive enterprise not only ties them to a much broader and more inclusive set of theoretical constructs, but also allows them to be examined as important phenomena in their own right. As we argued at the outset, memory beliefs provide much of the underlying impetus for memory behavior and performance, and comprise an important aspect of people’s concept of self. Thus, answers to questions such as “How good is your memory?” provide insights into a complex set of dynamic processes that set the stage for researchers to interpret what people do and how well they perform on any memory task.

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