



Original article

An empirical analysis of lay conceptions of memory domains

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ABSTRACT

Although experts consider memory in terms of different domains (e.g., short-term memory, spatial memory), little is known about the way in which lay people conceive memory domains. Study 1 addressed this issue by asking 79 French lay people to group together 125 memory situations (previously generated by lay people) according to their similarity. Study 2 used a similar procedure with 99 American lay people and 40 different memory situations. Hierarchical cluster analyses revealed five main memory domains common to the two studies: learn a set of things and recall them later, episodic and detailed memory, autobiographical memory, memory for day-to-day living, and failure to remember. Study 1 revealed a further domain: memory for intellectual and exact knowledge. Identifying these shared lay conceptions of memory provides insights into how lay people communicate about memory and will enable the construction of memory self-evaluation measures that are more representative of all memory domains.

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1. Introduction

Casual observations of the ways in which people talk about memory suggest that they divide memory into different domains, such as memory for names, faces, numbers, and dates, or memory for distant events vs. recent events. In other words, lay people appear to have their own conceptions of the domains into which memory situations can be classified. Lay conceptions are defined as schematic knowledge structures that group together beliefs about different attributes (Dweck, Chiu, & Hong, 1995; Ross, 1989; Schneider, 1973) and are anchored in the language used to talk about a construct, in this case, memory. They influence the way people process information and make judgments, and have been shown to be important in areas as varied as disease progression, abilities, and personality (e.g., Bless & Schwarz, 2010; Butler, 2000; Ross, 1989). Lay conceptions of memory are particularly important in understanding memory self-evaluation (MSE) and memory performance (Cherry, Brigman, Reese-Melancon, Burton-Chase, & Holland, 2013; Niedźwieńska, Neckar, & Baran, 2007; Plaks & Chasteen, 2013; Schwartz, Benjamin, & Bjork, 1997). For example, Plaks and Chasteen (2013) reported lower memory performance

in older adults who adhered to the entity theory of memory (i.e., belief that memory abilities are generally fixed) than in those who adhered to the incremental theory (i.e., belief that memory abilities are generally malleable). In addition, a strong belief in ageist stereotypes about memory is associated with higher reported frequency of forgetting (Cherry et al., 2013) and higher memory complaints, even after controlling for memory performance and mental health (Pearman, Hertzog, & Gerstorf, 2014).

Research has examined lay conceptions of memory functioning (i.e., how memory works) and lifespan memory development (i.e., changes in memory with age), but, to the best of our knowledge, no work has directly studied the categories (which we refer to as domains) into which lay people classify memory situations. Although there is a large body of research into the categorization of memory situations into memory systems, and several taxonomies of memory have been drawn up on the basis of criteria such as anatomic differences, processes and representations, and developmental differences (Willingham & Goedert, 2001), studies by memory experts do not throw much light on the ways in which lay people categorize memory situations. Nevertheless, it is important to determine lay people's conceptions of memory domains for a number of reasons. First, it is essential to understand the meaning given to memory situations in order to assess everyday perceptions of memory and the way people talk about memory in situations such as clinical cognitive assessments, academic settings, and the workplace (e.g., Sternberg, 1985, with respect to intelligence,

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creativity, and wisdom). Second, judgments and beliefs about memory differ depending on the memory domain being considered. For example, when making judgments about the causes of memory failures, individuals are more likely to consider lack of effort and attention to be the causes of episodic memory failures rather than semantic memory failures (Erber, Prager, Williams, & Caiola, 1996), and to be the causes of short-term memory failures rather than long-term memory failures (Erber, Szuchman, & Rothberg, 1990). Lifespan development of memory provides another example, with individuals tending to believe that memory decrease is greater for names than it is for faces, and greater for new information than it is for familiar information (Lineweaver & Hertzog, 1998).

Memory evaluation research provides a third argument for studying lay conceptions of memory domains. Factor analyses of memory self-evaluations have identified some of the factors underlying memory judgments in domains such as spatial memory and verbal memory (e.g., Crook & Larrabee, 1990; Herrmann & Neisser, 1978; Schulster, 1981), number recall (e.g., Crook & Larrabee, 1990), appointments (e.g., Schulster, 1981), and rote memory (e.g., Herrmann & Neisser, 1978). These studies suggest that evaluations of memory capacity vary from one domain to another, so people's memory self-evaluations (MSE) are likely to vary according to their conception of the memory domain involved. This has implications in clinical settings, as MSE measures are frequently used to assess patients' cognitive functioning, memory complaints, and subjective memory impairments. Several MSE measures, for example, retrospective functioning (e.g., Gilewski & Zelinski, 1988) and memory complaints (e.g., Abdulrab & Heun, 2008), include questions that use the term "memory" without describing the different types of memory. However, if the word "memory" is conceived as consisting of different domains, people will answer differently according to the domain they focus on. For example, people who conceive of memory as referring primarily to events that are at least one week old will evaluate their memories in terms of how well they remember this category of events, which may not be the clinician's intention. Knowledge of lay conceptions of memory domains would allow MSE instructions to be tailored more precisely, thereby improving the reliability of these measures.

Fourth, identifying lay people's conceptions of memory domains may further understanding of the gap between subjective memory evaluations and memory performance (Beaudoin & Desrichard, 2011; Crumley, Stetler, & Horhota, 2014). It has been hypothesized that such memory evaluations are domain-specific (e.g., Hertzog, Park, Morrell, & Martin, 2000; Schmidt, Berg, & Deelman, 2001), as the mastery experiences people reactivate when predicting their performance on a particular memory task are those they perceive as being most similar to the requirements of the task (Bandura, 2003), that is, experiences that belong to the same domain as the task. However, there is little empirical evidence supporting this domain-specific hypothesis. Lay conceptions of memory domains would allow this hypothesis to be tested from another angle, using domains that are more relevant to lay people.

Other areas of cognition to have been studied from the lay conception standpoint include intelligence (e.g., Berg & Sternberg, 1992; Sternberg, Conway, Ketron, & Bernstein, 1981; Sternberg, 1985) and human goals (Chulef et al., 2001). However, despite the potential value of studying lay conceptions of memory domains, existing studies provide limited evidence of the domains into which lay people categorize memory. The results of judgments about memory and memory self-evaluation studies (e.g., attributions of the causes of memory failures, factorial analyses of self-evaluations) cannot be used to identify these domains for two main reasons. First, the domains identified by such studies are strongly dependent on items created by the researchers (Cavanaugh, Feldman, & Hertzog, 1998), so they do not throw light

onto lay people's conceptions of memory domains. Indeed, the memory domains recognized by lay people are likely to be different to those defined by experts, in the same way that lay people's conceptions of memory functioning differ from those of experts (e.g., Benjamin, Bjork, & Schwartz, 1998; Magnussen et al., 2006; Simons & Chabris, 2011). Second, even if an evaluation of a particular situation depends on its perceived conceptual similarity with other situations, the fact that two situations elicit similar judgments does not mean that these situations are perceived as similar. Therefore, domains cannot be identified merely on the basis that they led to similar memory judgments. Consequently, further research is needed to directly address the perception of similarities between memory situations.

2. Overview

Given the paucity of information about lay people's conceptions of memory domains, we carried out a two-part exploratory empirical study to identify the domains into which people classify memory situations. We began by conducting a pilot study in order to produce a set of lay-person-generated memory situations, which we then asked participants in two main studies to sort into piles of similar memory situations. Because our aim was to identify the memory domains used to classify memory situations that are perceived as similar, the studies used a sorting methodology rather than questions, as questions may have produced results biased by scientific terminology. In addition, the sorting method directly assesses the perceived conceptual similarity between situations. As we conceptualize memory domains as categories grouping together similar memory situations, we considered cluster analysis to be the best method for identifying these domains. Because clustering creates sets of objects (i.e., clusters) that are judged to be more similar to each other than to objects in other clusters, it can be used to identify categories containing similar memory situations, which we interpret as memory domains. We decided to use hierarchical clustering because we assumed that memory situations would have different levels of similarity, ranging from concrete (e.g., remember past personal events from 10 years ago) to abstract (e.g., long-term memory). Hierarchical analysis allowed us to identify memory domains (e.g., long-term memory) and sub-domains (e.g., episodic memory, semantic memory).

Participants in Studies 1 and 2 were asked to sort memory situations expressed by lay participants in a pilot study to identify memory domains. Given the importance of lay conceptions of memory domains for memory self-evaluation, Study 1 also tested whether lay conceptions of memory include domains recognized by specialists or, conversely, domains that specialists do not consider as belonging to memory. We did this by including in the sorting task items taken from two frequently used memory self-evaluation scales that cover several memory domains (the Capacity Subscale of the Metamemory In Adulthood Questionnaire—MIA Capacity, Dixon, Hultsch, & Hertzog, 1988; and the Memory Self Efficacy Questionnaire—MSEQ, Berry, West, & Dennehey, 1989). In Study 2, we varied the materials and the procedure in order to test the robustness of the clusters obtained in Study 1.

3. Pilot study

This pilot study allowed us to create materials (stage 1), check whether the situations generated are generally considered memory situations (stage 2), and test whether the procedure designed for the two studies would enable us to identify memory domains (stage 3). An important element in our design was to present participants with a set of memory situations that was not generated by experts, as situations created by experts may be influenced by their

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