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Brief article

Body posture facilitates retrieval of autobiographical memories ☆

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Abstract

We assessed potential facilitation of congruent body posture on access to and retention of autobiographical memories in younger and older adults. Response times were shorter when body positions during prompted retrieval of autobiographical events were similar to the body positions in the original events than when body position was incongruent. Free recall of the autobiographical events two weeks later was also better for congruent-posture than for incongruent-posture memories. The findings were similar for younger and older adults, except for the finding that free recall was more accurate in younger adults than in older adults in the congruent condition. We discuss these findings in the context of theories of embodied cognition.

Keywords: Embodied cognition; Autobiographical memory; Posture; Congruence; Aging

1. Introduction

How are autobiographical memories retrieved? As yet, no comprehensive theoretical account of the retrieval processes involved in the recall of autobiographical memories exists. However, several researchers have attempted to identify factors

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that facilitate their retrieval (Mace, 2004; Reiser, Black, & Abelson, 1985; Wagenaar, 1986). Retrieval can be enhanced under conditions of context dependence, i.e., when experimental conditions or cues are similar to the original event (Riskind, 1983; Smith, 1979). This improved retrieval has been explained as a result of encoding specificity. On this hypothesis, memory retrieval will be better to the extent that the conditions under which the item is retrieved are similar to the conditions under which the item was originally encoded (Thomson & Tulving, 1970).

The encoding-specificity account has received support in several studies. One study involved instructing participants to have a smile on their face and being in an upright erect position while they recalled pleasant or unpleasant experiences in their lives in one condition and instructing participants to have a downcast expression with head and neck bowed and body slumped while they recalled pleasant or unpleasant experiences from their lives in another condition (Riskind, 1983). Access to pleasant or unpleasant life experiences improved when participants were positioned in postures and facial expressions congruent with the emotional valence of these life experiences than when postures and facial expressions were incongruent with the emotional valence of these life experiences (Riskind, 1983). Another study demonstrated that nonsense syllables were relearned more quickly when the subject was in a body position congruent with the one that was assumed during learning compared to when the subject was in an incongruent body position (Rand & Wapner, 1967).

Thus, both posture and facial expression facilitate recall of information or autobiographical memories if they are congruent with the encoding context. Research on mood congruence and encoding specificity provides converging evidence on compatibility of mood and the emotional valence of the stimuli materials. Positive or negative information is more accessible in subjects with a congruent emotional disposition (Bower, 1981; Laird, Wagener, Halal, & Szegda, 1982).

This collection of findings reflects the importance of sensory and motor functions in memory retrieval. They are consistent with a view that conceptualizes cognitive processes as an integral part of the sensorimotor environment in which memory for a stimulus or event is stored in the cognitive machinery that processed it. Specifically, memory for a stimulus or event is stored in the perceptual and motor pathways that were involved in the processing of the event (Barsalou, Niedenthal, Barbey, & Ruppert, 2003; Damasio, 1999; Glenberg, 1997). As Damasio (1999) notes:

> The brain forms memories in a highly distributed manner. Take, for instance, the memory of a hammer. There is no single place in our brain where we will find an entry with the word hammer followed by a dictionary definition of what a hammer is. Instead... there are a number of records in our brain that correspond to different aspects of our past interaction with hammers: their shape, the typical movement with which we use them, the hand shape and hand motion required to manipulate the hammer, the result of the action, the word that designates it in whatever many languages we know (p. 220).