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Brief Report

Individual differences in preschoolers' emotion content memory: The role of emotion knowledge

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ABSTRACT

This study examined the relation between preschool children's emotion knowledge and their ability to recall emotionally salient information. In total, 42 participants (ages 35–65 months) viewed a brief video in which a child played with different toys and expressed one of four basic emotions (happy, sad, angry, or afraid) or a neutral expression in each of 10 vignettes. Children were tested on memory accuracy from the vignettes, and their emotion knowledge was also measured. Results indicated that preschoolers' emotion knowledge was significantly related to memory accuracy for emotion information above and beyond the effect of age or receptive language skills. Tests of a mediation model revealed that emotion knowledge fully mediated the effect of age (or general developmental level) on memory accuracy.

Introduction

Explanations for why preschoolers perform worse on memory tasks than older children and adults include the development of memory processes such as encoding, storage, and retrieval (Bauer, 2006, 2008; Fivush, 1993; Schneider & Pressley, 1989), strategy use (Saywitz, 2002), and factors broadly related to prior knowledge and experience such as schemas, personal relevance, and caregiver narratives (Alexander & O'Hara, 2009). However, there is considerable variability among preschoolers' ability to recall information (Ornstein & Myers, 1996). Sometimes younger children outperform older children on memory recall tasks (Recht & Leslie, 1988; Schneider, Körkel, & Weinert, 1989). Explanations of this phenomenon focus on the effects of prior knowledge about a topic such that individuals with more

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knowledge in a given domain typically display greater recall accuracy than those without prior knowledge. In these cases, prior knowledge is a better predictor of recall than age. The hypothesis that increases in conceptual knowledge explain (in part) memory improvements in young children has been limited to content that most preschoolers do not typically learn at an early age (e.g., baseball: Recht & Leslie, 1988; soccer: Schneider et al., 1989). This theory would be strengthened if it could be shown that prior knowledge plays a role in memory for a content domain in which children typically gain expertise over time.

Emotion knowledge includes many developing skills such as the ability to understand differences in emotional states, represent those states symbolically with words, recognize emotional states in others, and understand which feelings typically correspond with different events (Denham, 1998; Izard et al., 2011; Morgan, Izard, & King, 2010), and it is an ideal candidate for extending research in this way. First, children's emotion knowledge develops rapidly across the preschool years, the same period in which memory also improves dramatically. Second, although some exceptions exist, there is a substantial body of evidence indicating that emotionally salient content is associated with more vivid (Levine & Pizarro, 2004) and accurate (Canli, Zhao, Brewer, Gabrieli, & Cahill, 2000) memories. Evidence from autobiographical memory, laboratory, and brain imaging studies show that under certain circumstances, emotional events are recalled better than nonemotional ones (Canli et al., 2000; Levine & Edelstein, 2009; Murty, Ritchey, Adcock, & LaBar, 2010; Thompson, Skowronski, Larsen, & Betz, 1996). Third, the rate at which emotion knowledge develops varies among preschoolers so that children of the same age show differing levels of knowledge (Denham, 1998; Denham & Couchoud, 1990; Gross & Ballif, 1991). Consequently, although we would expect that memory for emotional information would improve with age, content knowledge about emotions should also predict memory for emotional information, possibly beyond the effects of age. Thus, in this study, the link between emotion knowledge and preschoolers' memory for emotion events was investigated.

Memory and content knowledge in children

In general, the more experience or knowledge one has about a particular subject, the more effectively one recalls information involving that subject matter (Bjorklund, 1987; Chi, 1978; Recht & Leslie, 1988; Schneider et al., 1989; Stein & Liwag, 1997). However, if new information is inconsistent with previous experiences and expectations, the encoded information may be altered (erroneously) to better fit existing schemas (Alexander & O'Hara, 2009; Ceci & Bruck, 1995). Although knowledge and experience typically increase with age, prior knowledge can also affect memory accuracy independent of age. In one such demonstration, Schneider and colleagues (1989) found that children across three different age groups (third to seventh grades) with greater knowledge about soccer were better able to recall information about a soccer story than peers with little knowledge of soccer. Indeed, when measures of "supported recall" were used, there were no age-related differences, only differences related to expertise in soccer. Importantly, measures of general aptitude (Schneider et al., 1989) and reading ability (Recht & Leslie, 1988) were not significant predictors of memory recall when prior knowledge was considered. However, when researchers have tried to create child experts through training, the expected link between content knowledge and memory is sometimes not upheld. For instance, DeMarie-Dreblow (1991) found that both children and adults who were explicitly taught new information did *not* score better on the memory task than those who were not taught the new information. These findings support the need to examine the acquisition of content knowledge that develops naturally in children.

Emotional memory content

Most studies focusing on children's emotion memory have investigated memory for medical procedures (Baker-Ward, Gordon, Ornstein, Larus, & Clubb, 1993; Goodman, Quas, Batterman-Faunce, Riddlesberger, & Kuhn, 1994; Peterson, Sales, Rees, & Fivush, 2007). In these studies, 3- and 4-year-olds typically recall less than older children, and the level of emotional reaction can have an independent positive effect on recall accuracy (Goodman et al., 1994). However, recall of emotional events under such extreme duress is sometimes reduced (Reisberg & Heuer, 2004), perhaps because high levels