



Contents lists available at ScienceDirect

Journal of Experimental Child Psychology

journal homepage: www.elsevier.com/locate/jecp



Brief Report

Are children conservative, liberal, or metacognitive? Preliminary evidence for the involvement of the distinctiveness heuristic in decision making



Marie Geurten^{a,*}, Sylvie Willems^b, Thierry Meulemans^a

^aNeuropsychology Unit, Department of Psychology: Cognition and Behavior, University of Liège, 4000 Liège, Belgium

^bPsychological and Speech Therapy Consultation Center (CPLU), University of Liège, 4000 Liège, Belgium

ARTICLE INFO

Article history:

Available online 17 February 2015

Keywords:

Distinctiveness heuristic
Metamemory
False memory
Recognition memory
Expectations
Children

ABSTRACT

The experiment tested whether young children are able to reduce their false recognition rate after distinctive encoding by implementing a strategic metacognitive rule. The participants, 72 children aged 4, 6, and 9 years, studied two lists of unrelated items. One of these lists was visually displayed (picture condition), whereas the other was presented auditorily (word condition). After each study phase, participants completed recognition tests. Finally, they answered questions about their explicit knowledge of the distinctive encoding effect. The results revealed that even the youngest children in our sample showed a smaller proportion of intrusions in the picture condition than in the word condition. Furthermore, the results of the signal detection analyses were consistent with the hypothesis that the lower rate of false recognitions after picture encoding results from the implementation of a conservative response criterion based on metacognitive expectations (distinctiveness heuristic). Moreover, the absence of correlation between children's explicit knowledge of the distinctiveness rule and their effective use of this metacognitive heuristic seems to indicate that its involvement in memory decisions could be mediated by implicit mechanisms.

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* Corresponding author. Fax: +32 43662875.

E-mail address: mgeurten@ulg.ac.be (M. Geurten).

Introduction

Over the past decades, researchers studying adult metacognition have placed a heavy emphasis on how expectations and naive theories about memory functioning can influence memory decisions by leading to the implementation of metacognitive rules (e.g., Schwarz, 2004; Tversky & Kahneman, 1973). Many of these studies have demonstrated the power of the heuristic hypothesis—which postulates that cognitive judgments are based on people’s metacognitive expectations—to explain memory decisions during adulthood (Hege & Dodson, 2004; McDonough & Gallo, 2012). By contrast, research on metacognition in children has only recently started to pay attention to the influence of these heuristics on decision making. In general, the existing literature indicates that memory judgments seem to be based on heuristics by 7 or 8 years of age (e.g., Koriat, Ackerman, Lockl, & Schneider, 2009). So far, the question of whether younger children can do the same has gone largely unexamined apart from Ghetti, Qin, and Goodman’s (2002) investigation of the distinctiveness heuristic in 5- and 7-year-olds.

Schacter, Israel, and Racine (1999) described the distinctiveness heuristic as a retrieval strategy that explains why the encoding of distinctive information (e.g., pictures) leads to a reduction in false recognition compared with the encoding of less distinctive information (e.g., words). People usually expect to be able to recollect more vivid details for pictures than for words. When these expectations are not fulfilled, participants tend to conservatively decide that the stimulus has never been presented. Conversely, when participants do not have such recollective expectations—for example, after encoding a word—they are inclined to apply a more liberal response criterion (Dodson & Schacter, 2002; Gallo, Bell, Beier, & Schacter, 2006; Johnson, Hashtroudi, & Lindsay, 1993).

Using a procedure inspired by the Deese–Roediger–McDermott (DRM) paradigm (Roediger & McDermott, 1995); Ghetti et al. (2002) asked young children to study lists of associated words presented either visually (pictures) or orally (spoken words) and then to perform a recognition test. Consistent with the distinctiveness heuristic account, their results highlighted a decrease in false recognitions following distinctive encoding compared with nondistinctive encoding in the two age groups. However, Ghetti and colleagues did not interpret these findings as the product of a heuristic. Instead, they hypothesized that the distinctiveness heuristic is a conscious decision rule based on explicit metamemorial knowledge. Consequently, they argued, young children’s limited metacognitive skills make it unlikely that young children would implement it.

Ghetti et al. (2002) offered two alternative explanations for the distinctiveness effect on children’s false recognition. Following Smith and Hunt (1998), they first supposed that distinctive encoding spontaneously impoverishes relational encoding by improving the processing of the differences between items. If the relation between items is not detected during study, then there should be less activation of conceptually related lures during the study, and these should consequently be less subject to false recognition at test. Second, Ghetti et al. (2002) suggested that a “recall-to-reject” strategy could have supported the rejection of lures in the distinctive encoding condition. Specifically, they hypothesized that distinctive encoding increases the likelihood that people will recall information about studied items that will enable them to disqualify similar distracters (Gallo et al., 2006; Rotello, Macmillan, & Van Tassel, 2000).

Nevertheless, the rejection of the distinctiveness heuristic hypothesis based on the assumption that young children do not have sufficient metacognitive abilities may be premature. Some recent studies have shown that on a judgment-of-learning task, even 4-year-olds are able to judge their own learning and develop accurate expectations about their future performance (Lipowski, Merriman, & Dunlosky, 2013). According to Dodson and Schacter (2002), these two metacognitive components (i.e., expectations about memory and the ability to judge learning) are the main prerequisites for the use of the distinctiveness heuristic. If children master them both, then nothing should prevent them from employing this metacognitive rule. Moreover, the fact that young children do not have enough explicit metamemorial knowledge to implement strategic decision rules also does not appear to be a barrier. For example, Koriat and colleagues (2009; see also Geurten, Willems, & Meulemans, 2015) established that children are able to rely on the memorizing effort heuristic—a metacognitive strategy that associates greater ease of encoding with greater probability of future recall—to guide their memory decisions without demonstrating any explicit knowledge of the rule. In other words, Koriat and colleagues’

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