Available online at www.sciencedirect.com
ScienceDirect
Personality and Individual Differences 42 (2007) 409–418
PERSONALITY AND INDIVIDUAL DIFFERENCES
www.elsevier.com/locate/paid

Need for cognition and false memory in the Deese–Roediger–McDermott paradigm

Loranel M. Graham *

Our Lady of the Lake University, Department of Psychology, 411 S.W. 24th Street, San Antonio, Texas 78230, USA

Received 29 March 2006; received in revised form 1 July 2006
Available online 12 September 2006

Abstract

Two experiments investigated whether false recognition in the Deese–Roediger–McDermott (DRM) paradigm is mediated by individual differences in need for cognition. In Experiment 1, participants were presented with word lists composed of associates which converge on a non-presented critical word. On a subsequent recognition test, high need for cognition participants falsely recognized a greater proportion of critical words as having been previously studied than did low need for cognition participants. Experiment 2 replicated Experiment 1, and also tested a manipulation of list strength. Word lists used were either strong or weak in terms of eliciting the critical item. These experiments show that individual differences in approach to information processing tasks can affect the rate of false memory elicited in the DRM task.

Keywords: Need for cognition; False memory; False recognition; Deese–Roediger–McDermott; DRM

1. Introduction

A popular technique for studying memory illusions in the laboratory is the Deese–Roediger–McDermott (DRM) paradigm (Deese, 1959; Roediger & McDermott, 1995). The DRM task involves presentation of word lists consisting of semantic associates to a critical, non-presented word. For example, the words "snow, ice, chilly, weather, air, and frost" are all strongly associated with

* Fax: +210 348 7816.
E-mail address: grahl@lake.ollusa.edu

0191-8869/$ - see front matter
doi:10.1016/j.paid.2006.07.012

the critical semantic associate "cold." The DRM paradigm typically produces high levels of false memory for the critical words, and false recall can be as high as accurate recall of studied items (Roediger & McDermott, 1995).

Several theories have been put forth to explain false memory in the DRM task. According to fuzzy trace theory (Brainerd & Reyna, 2002; Brainerd, Wright, & Reyna, 2001), at the time of encoding, both a verbatim representation of the surface form and a gist representation of the meaning of a word list are formed. The theory posits that false recollection on the DRM task occurs via the gist representation. At the memory test, the gist trace results in a sense of familiarity for the critical word, and the participant incorrectly ascribes this to having studied the word previously.

According to the activation-monitoring approach (Gallo & Roediger, 2002; Roediger, Balota, & Watson, 2001), during list study, semantic associates to list words may be consciously or unconsciously activated through either elaborative processing of the list or spreading activation through a semantic memory network. The critical item is the highest semantic associate to the list words, and false memory for critical items results from their activation during encoding.

Both the fuzzy-trace and activation-monitoring accounts hold that information processing during list encoding is an important mechanism of false memory. Further, there is a great deal of research showing that encoding conditions at study affect levels of false memory, such as presentation duration (McDermott & Watson, 2001), presentation modality (Gallo, McDermott, & Percer, 2001), and levels of processing (Thapar & McDermott, 2001; Toglia, Neuschatz, & Goodwin, 1999). The effect of levels of processing is particularly relevant to the current research. Studies show that task instructions promoting deeper, semantic processing of DRM lists increase false memory for critical items (Chan, McDermott, Watson, & Gallo, 2005; Thapar & McDermott, 2001; Toglia et al., 1999).

Although processing during encoding is a mechanism of false memory in the DRM task, very few studies have examined how individual differences in processing affect performance on the task. Yet individual differences in cognition and personality, such as working memory capacity (Engle, 2002), reflectivity/impulsivity (Swanson & Schumacher, 1986), and need for cognition (Cacioppo & Petty, 1982) have moderating effects on cognitive activity. A few studies do indicate that individual differences can affect DRM task performance. For example, higher vividness of imagery is associated with greater false recognition (Winograd, Peluso, & Glover, 1998). Expertise can also increase false recall in the expert's domain (Baird, 2001). And recently, Watson, Bunting, Poole, and Conway (2005) found that, when warned about false memory in the DRM task, those with higher working memory spans produced lower levels of false recall, compared to those with lower spans. These studies illustrate that DRM task performance can be mediated by individual difference variables. The primary goal of the present research was to examine how an individual difference variable that is specific to encoding and information processing affects DRM task performance.

2. Need for cognition

While some individuals actively seek opportunities to engage in effortful thought, others prefer to avoid extensive processing of information. This difference in information processing was conceptualized by Cacioppo and Petty (1982) as *need for cognition* (NFC). Those who are high in NFC engage in more elaborate information processing, which may be characterized by a deeper,