

Neural correlates of the episodic encoding of pictures and words

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INTRODUCTION

The effects of levels of processing (LoP) on memory performance are extensively studied in psychology for about half a century. The initial observation of superior memory for words studied under a semantic orienting task instead of a perceptual orienting task elicited a theoretical debate about the underlying mechanisms of this effect. The main aim of this study was to explore the results of LoP on two distinct components of recollection memory: context recollection, and target recollection—processes recently differentiated in dual-recollection theory. The considerable research has been dedicated to understanding the mechanisms underlying two highly consistent empirical findings: the quantity of processing (LoP) effect, and thus the image superiority effect. The former is an observation that semantically encoded items are better remembered than perceptually encoded items, whereas the latter shows that pictures are generally easier to recollect than words. The aim of this paper is to analyse the LoP effect for words and pictures from a comparatively new theoretical perspective of the dual-recollection theory

Levels of processing effect with pictorial stimuli

LoP effects are studied not only with verbal but also with pictorial material, yielding considerably mixed results. In some studies, particularly those using pictures from the same category among studies using pictorial material displaying objects belonging to different categories, found the poorest recall of pictures following structural processing with no differences between the phonological and semantic encoding conditions

This theory also assumes interconnections between the systems an image can activate a verbal label, a concrete word can evoke a nonverbal image, and retention of data in memory depends on the number and type of codes.

Levels of processing effect from the perspective of recognition memory dual-process models

In recognition memory literature, two qualitatively distinct components of memory performance are often described and mentioned as recollection and familiarity. But two approaches

are dominant. In the first model, recollection and familiarity are treated as subjective states accompanying episodic and long-term memory system activity, respectively. In order to review these components, participants are often asked to introspect the idea of their memory judgments.

Verbal and pictorial materials were utilized in several experiments and therefore the participants were asked to recollect the study context defined by the type of orienting task performed. LoP effects were confirmed for context and target recollection when words were used as stimuli. However, reversed LoP effects for context recollection were found in experiments using pictures because the to-be-remembered material. The function of the distinctiveness of pictorial material and therefore the role of the effortfulness of cognitive operations for recollection were analysed and discussed from the attitude of the sensory-semantic model and the source monitoring framework.

According to semantic encoding does not always enhance recollection. Their experiments showed that recollection could also be superior after phonemic encoding if a rhyme recognition is employed as a memory test that gives a far better match for this condition. For words, accurate memory attribution judgments were higher within the semantic condition than within the perceptual condition, whereas precisely the opposite effect occurred for pictures.

This puzzling observation was described from a completely unique perspective of the twin recollection theory. A process-level analysis of the components involved within the LoP effects demonstrated that context recollection was affected during a disproportionate way by orienting tasks for pictures vs. words

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