

# **The dimensions of mental models created by a listener's mind**

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## Abstract

A substantial number of studies on mental models have examined spatial accessibility in mental models during narrative comprehension. Accessibility of objects was dependent on how close they were to the current protagonist's location with closer objects being more accessible than further objects. This gradient of accessibility was conceptualized as the *spatial distance effect* (Morrow, Greenspan, Bower, 1987). Previous studies had used artificial designs and measures that made it difficult to generalize the results obtained. These included: memorizing a visual map before reading the narrative, using short or simple narratives and interrupting the natural reading process of a narrative for probing to occur. Furthermore, these studies focused on mental models constructed from written text. Few had attempted to explore mental models constructed from an audio narrative. The purpose of the present study was to use a naturalistic audio narrative to demonstrate the spatial representations in mental models. The setting of the narrative was on a deserted island and consisted of nine separate episodic events (episodes). The nine episodes were used to create prime-target word pairs that were used for probing during the lexical decision task. Forty participants from Murdoch University participated in a computerized go/no-go lexical decision task (LDT) where reaction time was documented to measure spatial proximity in mental models. Participants were assessed on reading enjoyment prior to the LDT. The findings showed evidence of the *spatial distance effect*, faster reaction times were observed for episodes that were located closer together than those further apart. There was unexpected sex differences observed. The *spatial distance effect* was observed for male participants but not for female participants. Interpretation and implications for future research were discussed.

*Keywords:* Mental models, spatial distance effect, spatial dimension, lexical decision task, sex