ABSTRACT

THE ROLE OF LANGUAGE IN THE DEVELOPMENT OF TEMPORAL COGNITION IN

6- TO 10-YEAR-OLD CHILDREN

By

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The ability to recognize and represent temporal patterns (i.e., *temporal cognition*) emerges during the preschool years and undergoes significant refinement in middle childhood concurrent with advances in children's language and nonverbal skills. Myriad tasks have been developed to assess temporal cognition, although a paucity of research evaluates whether disparate tasks assess similar underlying abilities. This research examines performance on four assessments of temporal cognition in relation to a battery of language and nonverbal abilities with the aims of confirming age-related improvements, exploring whether disparate measures are indices of an underlying construct, and examining the role of language and nonverbal abilities.

Sixty-two children (32 girls, 30 boys, *M*=8 years; 2 months, range 6;0-10;8) completed standardized assessments of receptive vocabulary, receptive grammar, reading, nonverbal intelligence, and working memory, in addition to the four temporal cognition assessments (two verbal and two nonverbal). The verbal tasks consisted of the *Months Relative Order* task, assessing event ordering ability (e.g., knowledge of the sequence of months), and the *Time Labeling* task, assessing knowledge of conventional time patterns (e.g., day or month associated with specific events. The nonverbal tasks consisted of the *Draw Lifecycle of a Tree* task, assessing diachronic thinking (e.g., awareness of biological change over time), and the *Character*

Intentions task, a measure of theory of mind adapted here to assess the ability to predict future behaviors (e.g., infer a character's future actions).

Preliminary analyses indicated a significant relationship between individual temporal cognition measures and scores on various language and nonverbal abilities. The first aim was supported providing confirmation of the age-related improvements in temporal cognition documented in previous research. Results revealed that accuracy on the Months Relative Order, Time Labeling, Draw Lifecycle of a Tree, and Character Intentions tasks improved with age; however, the Draw Lifecycle of a Tree task was only marginally significant. The second aim of the study was to explore whether the four disparate measures of temporal cognition were significantly related. Principal components analysis revealed one underlying factor explaining 57.84% of the variance across tasks. To address the final aim, stepwise regressions explored relationships between temporal cognition and developmental changes in nonverbal intelligence, working memory, and language ability. Results revealed that language ability predicted gains in temporal cognition over and above effects of age, nonverbal intelligence, and working memory. Additionally, mediation analyses showed that the effects of age, nonverbal intelligence, and working memory on temporal cognition were mediated by language abilities. These results extend prior work by demonstrating the validity of the construct of temporal cognition, assessed via verbal or nonverbal tasks, while highlighting the role of language as a mechanism promoting its development.