Anaphoric distance dependencies in the sequential structure of wordless visual narratives

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Abstract

Language has been characterized as a "unique" facet of human cognition with complex syntactic features like anaphora and distance dependencies. However, visual narratives, like comics, have been argued to use similar sequencing mechanisms. These narrative structures include "refiner" panels that "zoom in" on the contents of another panel. Similar to linguistic anaphora, refiners co-referentially connect inexplicit information in one unit (refiner/pronoun) to a more informative "antecedent." Also, refiners can follow their antecedents (anaphoric) or precede them (cataphoric) with either proximal or distant connections. We explored these constraints of order and distance on visual narrative refiners by measuring event-related brain potentials (ERPs) to wordless comic strips. Anaphoric refiners evoked late sustained negativities (Nref) while distant anaphoric refiners attenuated N400s compared to all others, and all distance dependencies evoked leftward negativities. These responses are consistent with (neuro)cognitive responses shown to anaphora in language, suggesting domain-general constraints on the sequencing of referential dependencies.