Medial Temporal Lobe Volume Predicts Elders' Everyday Memory

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Everyday memory[1]

of "what is happening now." An event model represents information that is invariant across an event, but it must be updated when one event ends and another begins. EST posits that when an event model is updated, an event boundary is perceived. Event boundaries serve as

cerebrovascular disease, or depression. We scores of 0.5 (15 females, 26 males), and 21 individuals with CDR scores of 1 (7 females, 14 males).

Materials

Event segmentation—Participants watched four movies: one practice and three experimental movies. The practice movie involved a male actor building a ship out of Legos (duration = 155 s). The experimental movies involved a female actor preparing breakfast (329 s), a male actor decorating for a party (376 s), and a female actor checking out a book at a library (249 s). Participants watched and segmented each movie twice—once at a coarse grain and once at a fine grain. As they watched the movies, participants were instructed to press the space bar on a computer keyboard each time they thought one large (coarse grain) or small (fine grain) meaningful unit of activity ended and another began (see Segmentation Procedure in the Supplemental Material availa0 entlfins). We mesdurd n

Gray matter volume estimates were obtained using FreeSurfer 5.1 image analysis suite (http://surfer.nmr.mgh .harvard.edu/; Fischl, 2012), and regions of interest (ROIs) were based on the Desikan–Killiany atlas (Desikan et al., 2006). ROIs potentially associated with everyday memory were the DLPFC, which was defined as the rostral middle frontal gyrus,[4] and MTL, which was made up of the entorhinal cortex, hippocampus, and parahippocampal gyrus regions (which include the perirhinal and parahippocampal cortex). Volumes were summed across hemisp4d2 Tionsn normalizsumtompantrol fors ofrmedantentter volned uwere4gnsumtomllyp4s a b

Given the high correlation between CDR score and MTL volume ($r = -.64$,

may lead to decreased ability to differentiate between two events, and thereby impair everyday memory.

Third, the MTL has been implicated in binding features together during on-line perception (Hannula, Ryan, Tranel, & Cohen, 2007; Hannula et al., 2006). It is possible that this binding, and thus the MTL, is necessary for constructing effective event models. Impaired construction of event models would lead to less effective event segmentation.

Finally, the MTL may contribute to the maintenance and updating of currentred

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Table 1

Descriptive Statistics for Age, Segmentation Agreement, Everyday Memory, and Brain Volume

Table 2

Correlations Between Segmentation Agreement, Everyday Memory, and Brain Volume

Variable

Table 3
Results of the Exploratory Factor Analysis