



Relation of Executive Functions and Performance in Conversation Among People with Aphasia

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Introduction

Executive functions (EF) have been found to be associated with different levels of language processing, such as word production (e.g., Martin & Allen, 2008), sentence comprehension (see review in Key-DeLyria & Altmann, 2016), and functional communication (Fridriksson et al., 2006) measured by the American Speech-Language-Hearing Association Functional Assessment of Communication Skills for Adults (ASHA FACS; Frattali et al., 1995). Its importance in engaging in a conversation has been discussed in a single case report by Frankel et al. (2007) via detailed examination into the relation between deficits in EF and difficulties in conversational repair of the participant with both cognitive and language impairments. However, empirical evidence is lacking in demonstrating the relation between EF and functional communication in conversation of PWA. The current study aimed to fill this research gap by examining the association of EF and functional communication in a conversational context. It is hypothesized that EF would significantly predict performance of information exchange of PWA during conversation.

Method

Forty-seven Cantonese-speaking PWA participated in the study. Their performance on various cognitive tests evaluating EF, attention, and verbal short-term/working memory

was analyzed using principal component analysis, resulting in two cognitive factors reflecting PWA's EF, and attention and memory, as reported in Wong and Law (2020). Their ability in functional communication was estimated by calculating the number of main concepts narrated by the PWA in three story probes based on two comic strips and one short video to the communication partners who had no prior knowledge of their content. Since the ability to comprehend sentences might affect PWA's success in information exchange during conversation, their performance in such aspect was assessed via a Cantonese sentence comprehension screener (Law & Leung, 1998). The above assessments were taken twice with three weeks apart. Correlation among the cognitive and linguistic variables were calculated before being inputted into hierarchical regression analysis. The averaged scores of the story probes across the two assessments served as the predicted variable, and the two cognitive factors and sentence comprehension as predictors.

Results

The three predictors were significantly correlated with scores of the averaged story probes with p values $< .01$. Results of hierarchical regression are shown in the table below. Both sentence comprehension and EF significantly predicted average performance on story probes produced by PWA, together accounting for 68% of the variance.

Conclusions

The results confirmed our hypothesis about the role of EF in functional communication of PWA. This study is also among the first reports providing empirical evidence for the association between EF and conversation of PWA. Such finding highlights the importance of detailed cognitive assessment of PWA in the management process. PWA and their communication partners should be better informed about the nature of communication difficulties. Further studies to identify effective strategies for both parties to cope with cognitive-linguistic impairments and breakdown in conversation are warranted.

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