
Assessing Executive Functions of Turkish-German Bilinguals, Turkish Speaking Children with S/LI and Turkish Speaking Monolingual Children

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Abstract

Introduction: Executive functioning is a term used to identify the processes necessary for planning and purposeful behavior (Anderson, 2002; Hungerford and Gonyo, 2007; Booth, Boyle & Kelly, 2010; Tropper et al., 2008). This includes the ability to selectively attend to focal stimuli, inhibiting an influential response, ability to monitor a situation, and ability to manipulate incoming information. A key component necessary for good executive functioning is working memory (Funashashi, 2001), the mechanism of which makes the information necessary for executive functioning to be processed.

Besides having severe language deficits, children with Specific Language Impairment (SLI) also present deficits in non-verbal executive functioning (EF), especially in inhibition and working memory. Yet, the value of impaired executive functions as a clinical marker of the children with SLI is debated because not all studies report executive deficits in SLI (e.g. Parigger 2012). In bilingualism, on the other hand children exhibit enhanced non-verbal inhibition skills, because of their constant need to inhibit one language while using the other. In the literature, there was not a significant difference seen between the partial bilinguals and monolinguals on some executive tasks (Bialystock & Majumder, 1998).

Methods & Procedures: The present study explored the relationship between children with bilingualism and SLI, comparing their performances with age and gender matched typically developing. The data from 38 children between 5-6 year-olds from the following three groups were analysed: (a) 14 Turkish-German bilinguals living in Germany (b) fourteen typically developing Turkish-speaking children living in Turkey; and (c) ten children with Specific Language Impairment living in Turkey. Groups were matched on first language, ethnicity and chronological age. Language performance was measured in Turkish with TELD and EF performance was assessed using verbal (day & night, forward digit span, backward digit span, N back 2) and non verbal tasks (fist & finger, embedded mouse, N back 2), tapping conflict inhibition/attentional control, inhibition, short term memory, working memory, monitoring and updating. Data were analysed using inferential statistical tests including independent T-test, Kolmogorov Smirnov test and Mann Whitney U test by SPSS 22.00 software.

Outcomes & Results: Findings demonstrated significant difference between children with SLI and their age and gender matched typically developing peers in Digitspan Forward Test [$t(18) = 4.91, p = 0.001$], Digitspan Backwards Test ($U = 15, p = .003$), Day and Night Test ($U = 16.5, p = .008$) and N-Back Letter Test ($U = 12, p = .003$). Children with typical

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development outperformed their peers with SLI on all these tasks. There was no significant difference between bilingual and typically developing children except N Back Letters ($U = 49$, $p = .021$). The performance of children with typical development was below bilingual group in this task. There was a significant difference between bilinguals and children with SLI on Digitspan Forward [$t(18) = -2.3$, $p = 0.03$] and Day and Night tasks ($U = 19$, $p = .015$) and bilinguals outperformed children with SLI on these tasks.

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