Deriving an Executive Behaviour Screener from the Behavior Assessment System for Children – 2: Applications to Adolescent Hockey Players With and Without Concussions

by

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Abstract

Objective: Executive functions govern our ability to navigate complex and novel situations in day-to-day life. There is increased interest on environmental influences that may cause changes to executive functioning. The current thesis involves two studies examining the derivation and performance of an executive behaviour screener from the Behavioral Assessment System for Children (BASC-2-PRS; Reynolds & Kamphaus, 2004) on two different adolescent samples using a previously derived four-factor model of executive functioning (Garcia-Barrera et al., 2011, 2013).

Methods: Study 1. BASC-2 PRS standardization data consisting of a demographically matched American sample of 2722 12-21 year olds was obtained. The screener was derived using 25 items assigned a priori to each executive factor. Confirmatory factor analysis (CFA), invariance testing, and multiple indicators multiple causes (MIMIC) models were used to evaluate the screener. Study 2. The screener was applied to a previously collected sample of 479 elite adolescent hockey players from Canada with or without a history of concussion, followed through a single season of play. CFA, invariance testing, and MIMIC models were used to evaluate the screener and the hockey sample was compared to the standardization sample. Results: Study 1. Acceptable-to-good reliability was obtained for all factors (α = .75-.89). The four-factor model was the best fit to the data (CFI = .990, TLI = .989, RMSEA = .037). Configural, metric, and scalar but not latent mean invariance was shown for sex. Age-related uniform differential item functioning (DIF) and SES-related uniform and non-uniform DIF were shown. Standardized norms for use in clinical settings were created. Study 2. Acceptable-to-good reliability was shown for 3 factors (α = .72-.85). Emotional Control showed poor reliability (α = .58). The four-factor model was the best fit to the data (CFI =
.991, TLI = .990, RMSEA = .026). Configural, metric, and scalar but not latent mean invariance was shown between the two samples. Uniform and non-uniform DIF were not observed for those with an increasing number of past concussions. **Conclusions:** Findings support the four-factor model measured through the screener in adolescence. Females and hockey players demonstrate fewer executive behaviour problems overall. Sex, age, and SES may influence the interpretation of factor scores. Continued exploration and development of the screener is suggested.

Keywords: executive function, confirmatory factor analysis, differential item functioning, concussion