INTRODUCTION

• Computerized neurocognitive assessments for concussion such as the Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT®) can be useful adjunctive measures for clinical diagnostics.
• ImPACT® proposes that outcomes from its 6 modules create four separate clinical composite scores (see figure 2), but the appropriateness of the composites is debated.
• Exploratory and confirmatory factor analyses (CFA) (Schatz and Maerlander, 2013; Iverson et al., 2005) have shown that two clinical composite scores instead of four may better account for the relationships between the data.
• For this study, we used CFA with different analytical parameters than previous studies to further examine the underlying ImPACT® factor structure.

OBJECTIVE

to assess the dimensionality of factors that compose the Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT®)

RESULTS

A confirmatory factor analysis (CFA) was conducted on retrospective baseline ImPACT® data. The CFA was analyzed using SPSS AMOS on a four-factor, oblique model with maximum likelihood estimates.
• Fit indices suggested poor model fit for the proposed four factor solution in our sample (see Table 1).
• Significant overlap was found between: Reaction Time and Visual Motor Speed factors and Visual Memory and Verbal Memory factors.
• Individual subtests varied significantly in the amount of variance explained by each of the four factors to which they were assigned (see Table 2).

DISCUSSION

Results from this study demonstrate that the existing four-factor/composite structure of ImPACT® results in poor model fit according to CFA, and these findings are consistent with previous literature. Given evidence of strong multicollinearity between the reaction time and visual motor speed factors and high correlation between visual and verbal memory factors, the two-factor solution proposed by Schatz & Maerlander (2013) describing a speed composite and a memory composite likely better represents the latent factor structure of ImPACT®. Clinical use and interpretation of ImPACT® may need to be re-assessed given the consensus of findings at this point. Our study did not directly test the two-factor solution in AMOS.

REFERENCES

