The Internal, External, and Diagnostic Validity of Sluggish Cognitive Tempo: A Meta-Analysis and Critical Review

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Abstract

Objective

To conduct the first meta-analysis evaluating the internal and external validity of the sluggish cognitive tempo (SCT) construct as related to or distinct from attention-deficit/hyperactivity disorder (ADHD) and as associated with functional impairment and neuropsychological functioning.

Method

Electronic databases were searched through September 2015 for studies examining the factor structure and/or correlates of SCT in children or adults. The search procedures identified 73 papers. The core SCT behaviors included across studies, as well as factor loadings and reliability estimates, were reviewed to evaluate internal validity. Pooled correlation effect sizes using random effects models were used to evaluate SCT in relation to external validity domains (i.e., demographics, other psychopathologies, functional impairment, and neuropsychological functioning).

Results

Strong support was found for the internal validity of the SCT construct. Specifically, across factor analytic studies including over 19,000 individuals, 13 SCT items loaded consistently on an SCT factor as opposed to an ADHD factor. Findings also support the reliability (i.e., internal consistency, test-retest reliability, inter-rater reliability) of SCT. In terms of external validity, there is some indication that SCT may increase with age (r = 0.11) and be associated with lower socioeconomic status (r = 0.10). Modest (potentially negligible) support was found for SCT symptoms being higher in males than females in children (r = 0.05) but not adults. SCT is more strongly associated with ADHD inattention (r = 0.63 in children, r = 0.72 in adults) than with ADHD hyperactivity-impulsivity (r = 0.32 in children, r = 0.46 in adults), and it likewise appears that SCT is more strongly associated with internalizing symptoms than with externalizing symptoms. SCT is associated with significant global, social, and academic impairment (rs = 0.38-0.44). Effects for neuropsychological functioning are mixed, although there is initial support for SCT being associated with processing speed, sustained attention, and metacognitive deficits.

Conclusion

This meta-analytic review provides strong support for the internal validity of SCT and preliminary support for the external validity of SCT. In terms of diagnostic validity, there is not currently enough evidence to describe SCT in diagnostic terms. Key directions for future research are discussed, including evaluating the conceptualization of SCT as a transdiagnostic construct and the need for longitudinal research.