

# INPLASY PROTOCOL

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**Review Stage at time of this submission:** Data extraction.

**Conflicts of interest:**  
None declared.

## The Neuropsychological Correlates of Sluggish Cognitive Tempo: A Systematic Review Protocol

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**Review question / Objective:** The objective the current review is to delineate the cognitive profile of SCT, particularly where it is similar to or different from ADHD-related inattention. In addition, the review will provide an analysis of methodological factors that might account for discrepancies in research findings and guidance for future studies.

**Condition being studied:** Sluggish cognitive tempo (SCT) is a constellation of symptoms originally identified among children with the inattentive subtype of attention deficit hyperactivity disorder (ADHD-I). These symptoms include daydreaming, inconsistent alertness, hypoactivity and lethargy. Although there is considerable overlap with ADHD-I, factor analytic and convergent and discriminant validity studies suggest that SCT is a distinct construct. Moreover, there is evidence that SCT may be common in a number of other disorders, including depression and autism - suggesting that SCT might represent an important transdiagnostic construct.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 28 August 2022 and was last updated on 28 August 2022 (registration number INPLASY202280102).

### INTRODUCTION

**Review question / Objective:** The objective the current review is to delineate the cognitive profile of SCT, particularly where it is similar to or different from ADHD-related inattention. In addition, the review will provide an analysis of methodological factors that might account for

discrepancies in research findings and guidance for future studies.

**Rationale:** SCT can have important clinical and functional implications, including social withdrawal, anxiety, depression and academic impairment. Despite these implications, however, SCT often goes under-recognised and under-treated because it is not yet recognised in

diagnostic manuals. A key issue may be that the cognitive and neural mechanisms underpinning SCT symptoms are not well understood. To date, the literature examining SCT's neuropsychological correlates, including how these correlates differ from ADHD-I, has been mixed. A number of methodological issues might account for these discrepancies. Therefore, a systematic review of studies investigating the neuropsychological correlates of SCT is proposed as a means of understanding the cognitive deficits that underpin SCT's symptom profile, as well as methodological issues that might account for mixed findings in the literature.

**Condition being studied:** Sluggish cognitive tempo (SCT) is a constellation of symptoms originally identified among children with the inattentive subtype of attention deficit hyperactivity disorder (ADHD-I). These symptoms include daydreaming, inconsistent alertness, hypoactivity and lethargy. Although there is considerable overlap with ADHD-I, factor analytic and convergent and discriminant validity studies suggest that SCT is a distinct construct. Moreover, there is evidence that SCT may be common in a number of other disorders, including depression and autism - suggesting that SCT might represent an important transdiagnostic construct.

## METHODS

**Search strategy:** Searches were conducted using PubMed, PsycINFO, PsycARTICLES, and Embase. The search terms included "(sluggish cognitive tempo)" and "(neuropsychology) or (neuropsychological) or (neurocognitive) or (cognitive) or (cognition)".

**Participant or population:** Human participants across the life span will be included, including both clinical and non-clinical populations.

**Intervention:** Not applicable.

**Comparator:** For between-subjects studies, a comparator group of participants without elevated sluggish cognitive symptoms.

**Study designs to be included:** All study designs that allow for an understanding of the relationship between SCT and potential neuropsychological deficits will be included.

**Eligibility criteria:** Inclusion criteria as follows: 1. Original research published in English; and 2. Used neuropsychological methods to investigate cognitive impairments associated with SCT; and 3. Employed a published measure, specifically designed for identifying and quantifying SCT symptoms.

**Information sources:** PubMed, PsycINFO, PsycARTICLES, and Embase.

**Main outcome(s):** Study outcomes will be categorised according to neurocognitive domains recognised by the Diagnostic and Statistical Manual of the American Psychiatric Association 5th Edition (DSM-V), including complex attention, executive function, learning and memory, language, perceptual-motor function, and social cognition.

**Additional outcome(s):** Other variables of interest include sample age, gender and comorbid diagnoses.

**Data management:** Two reviewers will independently screen studies for inclusion using Covidence software, with conflicts resolved via discussion and/or input from an additional reviewer providing third-party oversight

Two reviewers will independently extract data from the studies selected for inclusion using a data extraction form, with one reviewer comparing the two datasets for discrepancies and correcting errors.

Data extracted will include

- Study title, author, journal, and year of publication;
- Study aim;
- Study funding sources and conflicts of interest reported by the authors;
- Participant recruitment method and setting;
- Sample size, age, gender composition and clinical diagnoses;
- Measures of SCT and neuropsychological

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functioning employed in the study; and  
- Statistical analyses used and study results, including effect sizes and statistical significance.

**Quality assessment / Risk of bias analysis:**

Risk of bias assessment will be conducted using an adapted version of the Joanna Briggs Institute Checklist for Analytical Cross Sectional studies. Two reviewers will independently assess the studies, with conflicts resolved via discussion and/or input from an additional reviewer providing third-party oversight. Methodological items assessed will include inclusion/exclusion criteria; recruitment method; sample description; validity and reliability of the study measures; identification, measurement and strategies for dealing with confounding factors; use of a control group; and statistical analyses.

**Strategy of data synthesis:** Tables will be used to synthesize data according to direction and significance of effect. Results will be organised according to the DSM-V neurocognitive domains.

**Subgroup analysis:** If sufficient data are available, we will conduct the following subgroup analyses

1. Children (6-11 years of age), adolescents (12-17 years), adults (18 +)
2. ADHD, no ADHD.

**Sensitivity analysis:** Not applicable.

**Language restriction:** English.

**Country(ies) involved:** Australia.

**Other relevant information:** Not applicable.

**Keywords:** sluggish cognitive tempo, cognition, neuropsychology, systematic review.

**Dissemination plans:** TBC.

**Contributions of each author:**

**Author 1 - Nicole Stuart -** Conceptualisation of the review, literature search, study screening, data extraction, quality assessment, data analysis, first

draft of the manuscript and approval of the final manuscript.

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**Author 2 - Karina Dorrington -** Study screening, data extraction, quality assessment and approval of the final manuscript.

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