Article

Psychometric Properties of the Turkish version of the Child and Adolescent Behavior Inventory Sluggish Cognitive Tempo Scale (CABI-SCT) in Children and Adolescents

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Abstract

Sluggish cognitive tempo (SCT) (cognitive disengagement syndrome) (CDS) describes a cluster of symptoms including slowness, lethargy, and daydreaming. This study aims to evaluate the psychometric properties of the Turkish version of the Child and Adolescent Behavior Inventory (CABI-SCT) scale and its relationship to other psychological difficulties. A total of 328 children and adolescents aged between 6-18 years were included in the study. CABI-SCT, Revised Child Anxiety and Depression Scale (RCADS), Barkley Child Attention Scale (BCAS), ADHD Rating Scale-IV, and Strengths and Challenges Questionnaire (SDQ) were administered to parents of participants. Reliability analysis demonstrated good internal consistency and reliability. Confirmatory factor analysis indicated that the one-factor model of the Turkish version of CABI-SCT is an acceptable construct. This study supports the validity and reliability of the Turkish version of CABI-SCT for use in children and adolescents providing initial data concerning the psychometric properties and difficulties associated with the Turkish version of the CABI-SCT.

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children, adolescents, sluggish cognitive tempo, depression, anxiety, cognitive disengagement syndrome

Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most prevalent neurodevelopmental problems in children characterised by impairments in inattention, hyperactivity, and impulsivity that are not appropriate for the age and developmental level of the person (American Psychiatric Association, 2013). Clinical presentations are broad and varied (Barkley & Murphy, 2006) with changes in classification of subtypes over time, currently accepted subtypes include inattention (ADHD-IN), hyperactivity/impulsivity (ADHD-HI), or combined subtype (ADHD-C) (American Psychiatric Association, 2013).

Although not currently considered a diagnostic entity, Sluggish Cognitive Tempo (SCT) or Cognitive Disengagement Syndrome (CDS), has garnered increasing clinical and research interest. This condition describes a number of cognitive symptoms frequently linked to but separate from ADHD inattentive type, it is considered a cognitive arousal and alertness disorder presenting with hypo-activity and lethargy, daydreaming and inconsistent alertness, slow working speed, sluggishness and mental fogginess (Barkley, 2014). SCT is viewed as an attentional-motivational construct, initially linked to ADHD inattention subtype, given the high rates of co-occurrence (30–63%) (Carlson & Mann, 2002; Garner et al., 2010). This link was further consolidated by studies finding a negative correlation with externalizing disorders, such as hyperactivity-impulsive type ADHD, oppositional behavior, and behavior problems (Becker et al., 2016). Subsequent studies reported on associations of SCT with, internalizing disorders (Lee et al., 2014; McBurnett et al., 2014), and social and peer related difficulties. It has also been found to predict poorer clinical response to ADHD medication, academic functioning and poorer quality of life as adults, highlighting the importance for independent assessment and management (Becker, 2014). SCT is viewed by some researchers and clinicians as an overarching concept independently affecting clinical outcomes. A number of empirically supported assessments were developed with good psychometric properties (Penny et al. (2009), and subsequently refined (Barkley, 2013; Lee et al., 2014; McBurnett et al., 2014; Willcutt et al., 2014). Limitations of existing measures remain and include reliance on post hoc measures consisting of a small and varied number of items (Carlson & Mann, 2002), includion of items not uniformly considered integral or sufficiently discriminatory to the condition, (Becker & Langberg, 2014; Smith & Langberg, 2017; Tamm et al., 2016). This has led to resurgence in the establishment of psychometrically robust and comprenhensive assessment tools.

A meta-analysis with more than 19,000 children and adults, examining the convergent and divergent validity of the SCT construct found many current SCT scales do not include all SCT symptoms (Becker et al., 2016). Factor analysis revealed that 13 items to consistently load on SCT factors compared to ADHD-IN factors and were retained as optimal items (Becker et al., 2016). A subsequent study evaluating mental confusion added three additional items (McBurnett et al., 2014) lead to the revised 16 item Child and Adolescent Behavior Inventory (CABI)-SCT (Becker et al., 2016). Ongoing research and scrutiny continues to refine these assessments, with the most recent 15 item CABI-SCT scale to show international validation through mother, father, and teacher ratings in the United States, South Korea, Spain, Chile, Nepal, and Turkey (Başay et al., 2021; Becker et al., 2020; Belmar et al., 2017; Becker, 2021; Burns and Becker, 2021; Jung et al., 2021; Khadka et al., 2016;

Sáez, Servera, Becker, & Burns, 2019; Servera et al., 2018). Additionally research is needed to investigate the relationship between SCT scales and other difficulties such as ADHD, depression, anxiety disorders, peer relationships.

This study sets out to determine the psychometric properties of the Turkish version of the CABI-SCT and examine its relationship to ADHD, depression, anxiety disorders, peer relationships, and total difficulties.

Methodology

Participants

The study sample included children and adolescents aged between 6 and 18 attending the child and adolescent psychiatry outpatient clinic at Erzincan University Mengücek Gazi Training and Research Hospital. Exclusion criteria were children with a diagnosis of autism, intellectual disabilities or psychoses. Parents unable to complete the scale were also excluded from the study. Parents of 473 youth meeting study inclusion agreed to participate giving written consent and made up the study sample. Inadequate scale completion (more than 50% items unanswered) rendered removal of 145 parental responses giving a study sample size of 328. The mean age of children was 10.2 years (SD = 3.45, range = 6–18), with 106 (32%) girls and 222 (68%) boys. Mothers (n = 245, 79.3%), fathers (n = 58, 18.8%) and other relatives (n = 6, 1.9%) completed the rating scales, with the average age of the respondent 37.5 years (SD = 6.63, range = 24–1).

Procedure

Ethical approval was received from the Erzincan Binali Yıldırım University Clinical Research Ethics Committee (No: 33216249–604.01.02-E.20736, Date: 24/04/2018) and participants gave written informed consent.

Permission for translation of the CABI-SCT to Turkish language and subsequent psychometric evaluation was received by the developers of the scale. Additional study forms were the Revised Child Anxiety and Depression Scale (RCADS), the Barkley Child Attention Scale (BCAS), the ADHD Rating Scale-IV (ADHD RS-IV), and the Strengths and Challenges Questionnaire (SDQ).

In addition to completing the CABI-SCT-Turkish version, parents also completed.

Measurements

Child and Adolescent Behavior Inventory (CABI)-SCT Module

The CABI-SCT 15 item scale was used given established reliability and validity (Becker et al., 2019; Burns and Becker, 2021; Sáez, Servera, Becker, & Burns, 2019). Items are scored using a five point Likert scale, ranking from 0–5 (‘almost never’, ‘seldom’ ‘sometimes’, ‘often’, ‘very often’ and ‘almost always’). Content equivalence between Turkish and English was ensured by translation into Turkish by English-speaking Turkish academics, and reviewed by a bilingual scholar. Back translation into English was examined with reference to the original English version by an independent researcher whose native language was English, and the wording, meaning and contents for each item evaluated. The final Turkish version of the items kept the original scale order regarding the number of items, their ranking and their grading. Cronbach’s α value on the 15 CABI-SCT-T items was .92.

Revised Child Anxiety and Depression Scales (RCADS)

This 47-item scale was developed to evaluate DSM-IV anxiety and depressive disorders in children and adolescents (Chorpita et al., 2000). This has been previously validated in Turkish sample (Gormez et al., 2017). It is available in two versions: a child version and a parent version. In this study, the parent version was used. There are subscales for generalized anxiety disorder (6 items), separation anxiety disorder (9 items), social anxiety disorder (7 items), panic disorder (9 items), obsessive-compulsive disorder (6 items), and major depressive disorder (10 items). Items are scored between 0 and 3 (0 = never, 1 = sometimes, 2 = often, and 3 = always). The scale produces scores ranging from 0 to 141. (0–18 for generalized anxiety disorder and obsessive-compulsive disorder, 0 to 31 for social anxiety disorder, 0 to 27 for separation anxiety disorder and panic disorder, and 0 to 30 for major depressive disorder). The cut-off score of the Turkish version of the scale was 7.5 for generalised anxiety disorder, 5.5 for social anxiety disorder, 6.5 for panic disorder, 11.5 for major depressive disorder, 9.5 for separation anxiety disorder, and 7.8 for obsessive-compulsive disorder.

ADHD Rating Scale-IV (ADHD RS-IV)

This 18-item scale was developed to evaluate DSM-IV ADHD symptomswith two subscales: inattention (IN-9 items) and hyperactivity-impulsivity (HI-9 items). Parents and teachers grade according to the severity of symptoms in the last 6 months. Items are scored between 0 and 3 (0 = never or rarely, 1 = sometimes, 2 = often and 3 = very often). The scale produces scores ranging from 0 to 51 (0–27 for inattention and 0–27 for hyperactivity-impulsivity). Four cutoff criteria for symptom classification were used to group the ADHD-RS-IV scores: (1) ADHD-RS-IV total score ≤18; (2) ADHD-RS-IV total score ≤10; (3) no ADHD-RS-IV item scored >1; and (4) ADHD-RS-IV total score ≤18 and ≤2 items per subscale with a response of 'often'. The Cronbach's α scores for ADHD-IN and ADHD-HI of the scale developed by DuPaul et al. (DuPaul et al., 1998) are .86 and .89, respectively. A rise in the scale's scores shows that the ADHD has increased.

Barkley Child Attention Survey (BCAS)

This 12-item screening scale developed by Barkley (Barkley, 2013) and validated in a Turkish sample (Firat et al., 2018), examines two attentional dimensions (i) sluggishness (5 items) and (ii) daydreaming (7 items). The sluggishness subscale comprises seven symptoms: decreased activity, lethargy, and slowness of behaviors, and the daydreaming sub-dimension of SCT comprises five symptoms: daydreaming, absent-mindedness mental confusion. Items are scored between 1 and 4 as (1 = never or rarely, 2 = sometimes, 3 = often and 4 = very often). Scores range from 1 to 48 (7–28 for daydreaming and 7–20 for sluggishness). Screen positive scores (Total >23) represent scores above 93rd % percentile or >1.5 standard deviations in normative US sample.

The Cronbach's α value on the BCAS items was .86.

Strengths and Difficulties Questionnaire (SDQ)

Goodman developed the SDQ to evaluate competence areas and problem behaviors in children and adolescents (Goodman, 1997). Güvenir et al. (Güvenir et al., 2008) performed the Turkish validity of the scale. It includes five subscales: attention deficit and hyperactivity (5 items), behavioral problems (5 items), emotional problems (5 items), peer problems (5 items) and social behaviors (5 items). Questions are scored as 0 for 'not true', one for 'partly true' and two for 'absolutely true'.

The scale produces scores ranging from 0 to 50 (0–10 for all subscales). The SDQ has parent, teacher and adolescent self-report form. This study used the parent form. Standard cut-off scores are (i) 5–6 for emotional difficulties, (ii) 4–5 for conduct problems, (iii) eight for hyperactivity, (iv) four for peer problems, and (v) six for prosocial subscale. The Cronbach's α value of the SDQ parent form was .84.

Statistics

The statistical processes of the adaptation of the scale were made with the JASP 0.14 (2020) program. JASP is a free and open source statistics package built on the R (Team, 2019) program, using R packages. Construct validity of the questionnaire was assessed using confirmatory factor analysis (CFA). Fit indices were evaluated as a result of CFA, according to recommended values for an adequate model fit based on the literature: Chi-squared statistic/degrees of freedom ($\chi 2/df$) < 5, root-mean-square error of approximation (RMSEA) < .08; Goodness-of-Fit Index (GFI) > .90 (Schermelleh-Engel et al., 2003), Comparative Fit Index (CFI) ≥ .95, The Standardized Root Mean Square Residual (SRMR) ≤ .08 (Keith, 2019; Kline, 2016), Tucker–Lewis index (TLI) ≥ .90 (Keith, 2019). The distribution did not meet the assumption of normality based on significant levels of skewness and kurtosis (Shapiro Wilk test, W = .954, p = .05). Diagonally Weighted Least Squares (DWLS) were used.

Reliability analysis was carried out through JASP with the McDonald's ω internal consistency coefficient used for internal consistency (the psych package (Revelle, 2019) from the R (2019) program).

Pearson's correlation test and Spearman's correlation tests were used to analyze criterion validity for SCT and other scales' scores. In addition, the student's t-test was used to test for gender effects.

Mean values were expressed with standard deviation. Results with $p < 0.05$ considered statistically significant.

Results

Description of CABI-SCT-T

Descriptive statistics for CABI-SCT-T are shown in Table 1. Overall mean score was 1.61 ± 1.14, with item means ranging from 0.880 and 2.436 (Table 2). There was a positive correlation between

Table 1. Descriptive Statistic of CABI-SCT-T.

	Total (n = 328)	Girls (n = 106)	Boys (n = 222)
Mean	1.61	1.82	1.52
Median	1.47	1.67	1.4
SD	1.14	1.23	1.09
Skewness	0.61	0.31	0.76
Kurtosis	−0.25	−0.91	0.30
Min-max	0–5	0–4.53	0–5

CABI-SCT-T: Child and Adolescent Behavior Inventory-Sluggish Cognitive Tempo; SD: Standard. Derivation; Min-Max: Minimum and Maximum Values.

Table 2. Descriptive Statistics, Adjusted Item-Total Correlation and t-Values for the CABI-SCT-T Scale.

Items	Mean	SD	Item total correlation	McDonald's ω if item deleted	t
SCT 1	1.590	1.602	0.597	0.930	14.953*
SCT 2	1.722	1.621	0.715	0.926	17.416*
SCT 3	1.210	1.476	0.683	0.927	14.359*
SCT 4	0.880	1.340	0.601	0.929	11.104*
SCT 5	1.669	1.631	0.625	0.929	14.253*
SCT 6	1.670	1.611	0.752	0.925	20.670*
SCT 7	1.311	1.469	0.558	0.930	11.826*
SCT 8	1.444	1.602	0.695	0.927	16.472*
SCT 9	1.410	1.652	0.573	0.930	13.703*
SCT 10	1.946	1.606	0.736	0.925	20.096*
SCT 11	2.436	1.676	0.742	0.925	23.269*
SCT 13	1.616	1.671	0.669	0.927	16.247*
SCT 14	2.022	1.677	0.717	0.926	19.871*
SCT 15	1.706	1.669	0.699	0.926	17.481*
SCT 16	1.867	1.861	0.594	0.930	16.037*

CABI-SCT-T: Child and adolescent behavior inventory-sluggish cognitive Tempo; SD: Standard Derivation. *$p < 0.05$.

age and CABI-SCT-T scale (r = .202, $p = \leq .001$). CABI-SCT-T scores were significantly higher in girls than boys (t = 2.636, $p = .01$).

Reliability Analysis of the CABI-SCT-T

Internal Consistency

Scale reliability was examined using McDonald's ω internal consistency coefficient. Internal consistency coefficient for the scale as a whole was .93, suggesting good reliability. The values between .60 and .80 as a result of the analyzes are "quite reliable" (Özdamar, 2004).

Distinguishing Features of Substances

Another way to examine reliability is t comparison of total score in the lower 27% and upper 27% groups. Independent t-test analysis indicated good item discrimination between groups. The independent group t-tests performed to determine the discrimination power of the scale items are presented in Table 2.

Item Analysis

The quality and distinctiveness of all 15 items were assessed using item-total correlation analysis. The correlation coefficient between each item on the scale and the total scale score was calculated and ranged between.55 and .75. These high correlations between overall scale scores and each other show that they measure the same dimension. Values related to the analysis are given in Table 2. The heat map for the correlation analysis is given in Figure 1.

In Figure 1, the heat map turns blue to indicate a positive relationship between the variables and red to denote a negative relationship. Absence of color reflects lack of relationship. Figure 1 illustrates that all items of the SCT scale are positively related to each other.

Validity Analysis of CABI-SCT-T

Confirmatory Factor Analysis (CFA) of CABI-SCT-T

One-factor CFA was applied to determine the construct validity of CABI-SCT-T. An appropriate model fit was indicated in the CFA: $\chi 2 = 136.307$, df = 87, $\chi 2/df = 1.57$; $p < 0.001$; RMSEA = 0.046 [CI lower = 0.032, CI upper = 0.060]; CFI = 0.99; TLI = 0.99; SMSR = 0.067. The CFA result of the CABI-SCT scale confirmed the single-factor structure of the measurement tool. Factor loads of the scale ranged between 0.858 and 1.323, all being significant. (see Table 3).

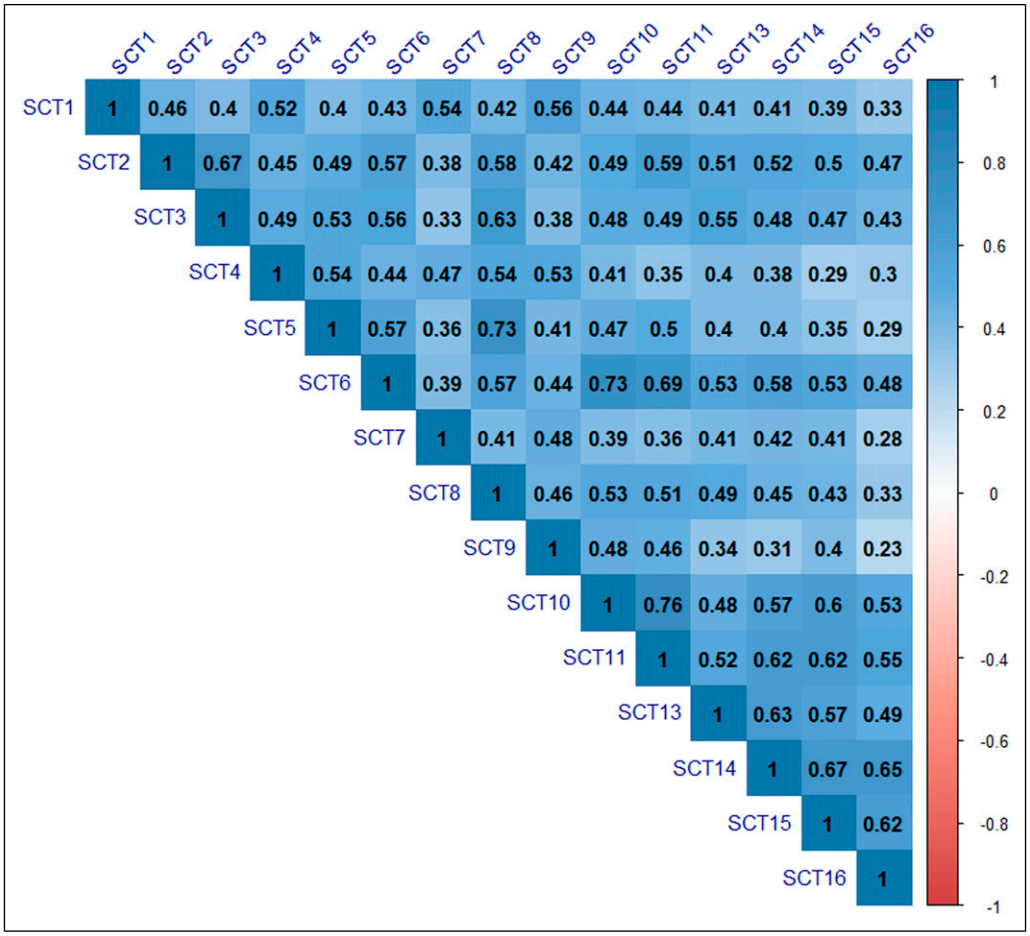

Figure 1. Correlation Heat map of Items of the CABI-SCT-T Scale.

Criterion Validity of CABI-SCT-T

Correlations between SCT and BCAS, ADHD RS-IV, RCADS and SDQ were examined to determine criterion-tolerance validity. There was a strong and positive correlation between SCT and BCAS (r = .870, $p < .001$), a moderate and positive correlation and ADHD RS-IV-IN subscale (r = .313, $p = .008$), a weak and positive correlation and ADHD RS-IV-HI subscale (r = .228, $p < .043$), and ADHD RS-IV total score (r = .221, $p = .046$). An examination of the relationship between the SCT and the subscale scores of the SDQ scale revealed a positive and strong correlation with emotional symptoms (r = .428, $p < .001$) and peer problems (r = .529, $p < .001$), as well as a positive and moderate correlation with total difficulties (r = .353, $p < .001$). In addition, SCT had a strong and positive correlation with the RCADS depression subscale (r = .458, $p < .001$) and a weak and positive correlation with the RCADS total anxiety subscale (r = .276, $p < .001$). Correlation analyses between SCT scores and other scale scores are shown in Table 4.

Discussion

This study evaluating the psychometric properties of the Turkish version of the CABI-SCT scale (referred to as CABI-SCT-T) parent form in a sample of children and adolescents showed it to be a valid and reliable scale for this population. This is the first study to investigate the associations between sluggish cognitive tempo and ADHD, depression, anxiety disorders, peer relationships, and total difficulties in Turkish children and adolescents.

Table 3. Factor loadings of CABI-SCT-T.

			%95 confidence intervals			
Items	Estimate	SE	Lower	Upper	Stand. Estimate	R^2
SCT 1	0.950*	0.040	0.871	1.029	0.594	0.353
SCT 2	1.193*	0.041	1.111	1.274	0.743	0.552
SCT 3	1.051*	0.040	0.972	1.129	0.717	0.514
SCT 4	0.861*	0.038	0.787	0.934	0.628	0.395
SCT 5	1.051*	0.043	0.966	1.135	0.642	0.413
SCT 6	1.305*	0.043	1.221	1.388	0.798	0.637
SCT 7	0.858*	0.038	0.784	0.931	0.578	0.334
SCT 8	1.126*	0.043	1.041	1.210	0.700	0.490
SCT 9	0.984*	0.042	0.901	1.067	0.595	0.355
SCT 10	1.267*	0.041	1.187	1.348	0.788	0.621
SCT 11	1.323*	0.039	1.245	1.400	0.791	0.625
SCT 13	1.178*	0.042	1.096	1.260	0.709	0.502
SCT 14	1.272*	0.041	1.192	1.353	0.757	0.573
SCT 15	1.229*	0.040	1.150	1.308	0.741	0.548
SCT 16	1.157*	0.043	1.072	1.242	0.623	0.388

CABI-SCT: Child and adolescent behavior inventory-sluggish cognitive Tempo; SE: Standard error; stand. Estimate: Standard Estimate. *$p < 0.05$.

Construct validity of the scale was performed with CFA, which indicated that the one-factor model of the Turkish version of the CABI-SCT for children and adolescents is an acceptable construct. Although the 15 SCT symptoms can be divided into three distinct subgroups (i.e., daydreaming, mental confusion, and low arousal), studies have shown that a single-factor construct to better represent SCT (Becker et al., 2020; Burns and Becker, 2021; Sáez, Servera, Burns, & Becker, 2019).

Consistent with other studies (Barkley, 2013; Leopold et al., 2016; Ludwig et al., 2009; Becker et al., 2016), this study found gender and age associations in that female gender and older age were associated with higher scores on the CABI-SCT-T. Other studies (Belmar et al., 2017; Camprodon-Rosanas et al., 2017; Carlson & Mann, 2002; Marshall et al., 2014) have not found this association and argue for the importance of ongoing study in this area.

To date, there have been few studies using more than one SCT scale (Fenollar Cortés et al., 2017). This study showed that the Turkish version of the CABI-SCT (ie CABI-SCT-T) is strongly correlated with the concept of sluggish cognitive tempo or SCT as assessed using the BCAS, revealing consistency of the scales with each other. Furthermore, the present study demonstrated that optimal SCT items are being used in the Turkish version of the CABI-SCT-T. Furthermore, the 15 SCT items were best understood as being one-dimensional, and acceptable among 6–18 years making it a clinical useful tool to examine SCT among Turkish youth.

Table 4. Results of the criterion validity of the CABI-SCT-T scale.

Scales	Pearson's r		p	Lower 95% CI	Upper 95% CI
BCAS	0.870	***	<.001	0.805	0.914
ADHD RV-IV-IN	0.313	**	0.008	0.086	0.509
ADHD RV-IV-HI	0.228	*	0.043	0.007	0.428
ADHD RV-IV(Total)	0.221	*	0.046	0.004	0.418
SDQ- emotional symptoms	0.428	***	<.001	0.233	0.590
SDQ- conduct problem	0.061		0.583	−0.158	0.275
SDQ- hyperactivity/inattention	−0.068		0.542	−0.281	0.151
SDQ- peer problems	0.529	***	<.001	0.353	0.670
SDQ- prosocial behavior	−0.184		0.099	−0.385	0.035
SDQ- total difficulties score	0.353	**	0.001	0.147	0.529
RCADS- depression	0.458	***	<.001	0.268	0.614
RCADS-GAD	0.108		0.335	−0.112	0.317
RCADS-OCD	0.146		0.192	−0.074	0.351
RCADS-PD	0.213		0.054	−0.004	0.411
RCADS- SP	0.193		0.082	−0.025	0.394
RCADS-SAD	0.147		0.188	−0.072	0.353
RCADS- total anxiety	0.193		0.082	−0.025	0.393
RCADS-total	0.276	*	0.012	0.062	0.465

CABI-SCT: Child and adolescent behavior inventory-sluggish cognitive tempo; BCAS: Barkley child attention scale; ADHD RS-IV-IN: ADHD rating Scale-IV inattention; ADHD RS-IV-HI: ADHD rating scale- hyperactive-impulsive; ADHD RS-IV-total: ADHD rating scale-IV-total; SDQ: Strengths and difficulties questionnaire; RCADS: Revised anxiety and depression scale; GAD: Generalized anxiety disorder; OCD: Obsessive compulsive disorder; PD: Panic disorder; SP: Social phobia; SAD: Separation anxiety disorder.
*p < .05, **p < .01, ***p < .001.

Previous work have shown a close but distinct relationship between SCT and ADHD other (Barkley, 2015; Becker & Barkley, 2018) and its close association with other psychiatric disorders (Becker et al., 2016). This study added additional evidence to these association among Turkish youth, and identified a moderate and positive relationship between SCT scores and ADHD RS-IV-IN scores. Although SCT was more strongly correlated with the inattentive type, a weak and positive relationship was found with hyperactive-impulsive type ADHD, and is similar to that reported among adults (Fredrick et al., 2021) and youth with obesity (Öğütlü et al., 2022).

Prior research has highlighted the link between SCT and internalizing disorders including anxiety and depression (Bauermeister et al., 2012; Becker & Langberg, 2013; Penny et al., 2009), with a suggestion that the daydreaming typically seen in SCT might be linked to rumination (Becker & Willcutt, 2019). This paper added to this body of evidence and reported a strong and positive relationship between the participants' depression scores and CABI-SCT-T score, and supports suggestions from other researchers that SCT may be included under the category of internalizing disorders in the future (Becker & Willcutt, 2019).

The high rates of co-occurrence of SCT and anxiety suggests a two-way relationship (Barkley, 2014; Becker et al., 2016). For example, attention control theory suggests that anxiety may impair attentional including the working memory and processing efficiency (Eysenck et al., 2007), resulting in increased mental clouding, fogginess, and slowed thinking/behavior, all features of SCT (Becker et al., 2021). Anxious teens may exhibit a negative anxiety response style, resulting in negative and persistent cognitions and cognitive impairment linked to excessive self-talk and negative affect (Starr et al., 2016). In addition, the anxious and ruminative thinking style may lead to social and academic difficulties typically seen in children with SCT (Becker et al., 2021).

To the best of our knowledge, no previous research has examined the correlation between SCT symptoms and different types of anxiety (e.g., social anxiety, panic, generalized loss symptoms). Positive correlation between SCT and the participants' total anxiety score was found in this study, although no significant correlation was found between the participants' anxiety subtype scores and SCT. The lack of association may be attributable to reliance on parental report, in that parents may be less cognizant of the various anxiety subtypes highlighting the importance of self-report measures.

This study found a strong and positive relationship between peer problems and the Turkish CABI-SCT scores, suggesting that youth with SCT have more peer related difficulties and concurs with previous studies reporting impaired peer and social relationships (Bauermeister et al., 2012; Becker & Barkley, 2018; Becker & Langberg, 2013). Other studies have found that levels of SCT predict degree of peer problems over time, even after controlling for other psychopathology symptoms and baseline peer functioning, making it an important area to study clinically (Becker, 2014). Whilst youth with ADHD are also recognized to have peer difficulties, these are considered attributable to social exclusion, as opposed to self-isolation and withdrawal seen in SCT. (Becker & Barkley, 2018). Mikami et al. observed that the levels of understanding social cues, initiating relationships and responding to questions were lower in youth with SCT compared to ADHD (Mikami et al., 2007).

A strength of the study is the examination of the CABI-SCT-T in clinically referred youth, aged 6–18 in Turkey, using a number of other standardized questionnaires previously validated in Turkish youth. Furthermore, to the authors' knowledge, it is the first study examining more than one SCT scale, and examining the relationship between SCT symptoms and specific anxiety types. The cross-sectional design of the study does not allow any inferences to be made regarding causality. The study is also limited by the lack of self-report and reliance on

parental report alone. Future studies need to include parents, teachers, and youth to allow a more comprehensive assessment of the structure and psychometric properties of SCT.

Conclusion

The results of this study show that the Turkish version of the CABI-SCT scale is valid and reliable for assessing SCT symptoms in children and adolescents. Initial data concerning the psychometric properties of CABI-SCT-T are presented. Criterion validity of the CABI-SCT-T are presented allowing the use of this questionnaire to add to the body of literature about the cultural validity of SCT.

The emerging evidence of SCT being considered as a distinct entity, closely aligned but separate from ADHD-inattentive type, is important. Longitudinal studies will allow differences in demographic factors, associated impairments, treatment outcomes help clarify SCT as a diagnostic entity and hopefully will lead to better recognition and management. Empirically developed and tested psychometric questionnaires are essential in this quest.

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Data Availability Statements

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

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