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Sluggish cognitive tempo symptoms cooccurring with attention deficit hyperactivity disorder

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Abstract

Background In the current study, the main aim was investigating the sociodemographic features and sluggish cognitive tempo symptoms of children diagnosed with attention deficit hyperactivity disorder and followed at an attention deficit hyperactivity disorder-specific outpatient clinic.

Results The data of 200 boys and 200 girls who were followed up at the attention deficit hyperactivity disorder outpatient clinic were retrospectively compared. The scores of Turgay's Scale-Disruptive Behavior Disorders Screening and Rating Scale, the Sluggish Cognitive Tempo subscale of the Children Behavior Checklist, and Conners Rating Scales Revised-Parent and Teacher Forms were analyzed. Among the group with Sluggish Cognitive Tempo scores, the ratio of girls was higher and the mean age at which symptoms of attention deficit hyperactivity disorder were recognized and treatment was offered was significantly older than that of the children with <4 scores. Both internalizing and externalizing symptoms were more frequent among the attention deficit hyperactivity disorder children who had Sluggish Cognitive Tempo scores ≥4.

Conclusions There is increasing evidence distinguishing sluggish cognitive tempo from attention deficit hyperactivity disorder, and in this study, we would like to highlight the appearance and clinical manifestation of these disorders together. Further research, including Sluggish Cognitive Tempo children from the general population, is warranted to understand the characteristics that accompany and differentiate attention deficit hyperactivity disorder.

Keywords ADHD, SCT, Male, Female, Follow-up

Background

The relationship between attention deficit hyperactivity disorder (ADHD) and sluggish cognitive tempo (SCT) symptoms are gaining more attention in recent years [7]. Initially, studies about sluggish cognitive tempo (SCT), were defined as a unique set of symptoms that are related to but separate from ADHD symptoms, to improve understanding of ADHD [1, 11, 20]. Especially, SCT symptoms were considered closely related to ADHD predominantly inattentive presentation (ADHD-I) [1, 11, 20]. Currently, symptoms of SCT are clearly known to be distinct from ADHD symptoms and considerable in understanding the association of ADHD with other psychiatric disorders [4, 6].

The clinical features such as drowsiness, daydreaming, and being "in a fog" are accepted as symptoms of SCT [6]. "Inconsistent alertness" consisting of daydreaming, fluctuations of alertness, absent-mindedness, and losing one's train of thought, and "slowness" consisting of

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drowsiness and slow thinking are determined to be two dimensions of SCT [15, 24].

The growing body of research suggested that SCT was a transdiagnostic statement or psychopathological dimension related with increased risk and functional impairment across other psychopathologies [6, 7]. More recently, the opinion that SCT symptoms cut across well-known diagnostic boundaries and provide a link between different psychopathologies has become more accepted [21]. The two different approaches about conceptualizing SCT may cause some confusion in understanding and evaluating the structure of SCT symptoms.

Whether being distinct from or redundant with ADHD, SCT symptoms cause impairment in quality of life due to social withdrawal, increased emotion dysregulation, poorer sleep quality and increased daytime sleepiness, and decreased self-esteem after controlling for ADHD [4, 6]. Additionally, the correlation of SCT with poorer academic functioning, decreased motivation, and poorer organization skills points to a more expansive impairment in different areas [23, 25]. Much of the literature also suggests that SCT symptoms are highly correlated with internalizing symptoms [11, 20, 28]. Although SCT symptoms appear to be related to internalizing symptoms broadly, the relationship between SCT and the specific domains of anxiety and depression symptoms remains unclear, although the evidence to date suggests a somewhat stronger linkage with depressive symptoms [6].

The current study contributes to the literature on SCT by using multiple measures and informants to examine the relations that SCT and ADHD have with demographic and clinical correlates in a clinic-referred sample of children and adolescents. Furthermore, this study involved the examination of more fine-grained aspects of internalizing problems (e.g., perfectionism and social functioning subdomains) than many past studies. Taking those findings into account, we expected that SCT might be associated with greater internalizing symptomatology, social problems, and ADHD severity. In the current study, we aimed to investigate the frequency of SCT symptoms among a clinic-referred ADHD population and to assess the effects of SCT symptom severity on the clinical manifestation of ADHD.

Methods
Participants
The recorded data of all the patients (*n*=400) who were aged between 6 and 18 years, followed up at our outpatient ADHD clinic (mean follow-up duration of 4.5 years), and were evaluated between January 1st, 2019, and December 30th, 2020, was analyzed retrospectively. Due to missing data, 53 patients were excluded, therefore the total number of patients included to the study was 347.

The ADHD diagnosis of participants was confirmed through clinical assessment according to the Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime (K-SADS-PL). The participants were excluded if there was found inadequate evidence supporting the diagnosis of ADHD.

Measures
Sociodemographic questionnaire
A questionnaire evaluating the sociodemographic features of the children, symptoms at the initial visit, current problems, ADHD presentations, comorbidities, duration of diagnosis, and treatment were created by the researchers. Sociodemographic data were collected from the patients' medical records.

Schedule for affective disorders and schizophrenia for school-age children-present and lifetime (K-SADS-PL)
This is a semistructured diagnostic interview searching the past and current psychiatric disorders in child and adolescent psychiatry. In the current study, it is administered to assess the presentations of ADHD and comorbid diagnoses. Its reliability was established by Gokler and colleagues [19].

The child and adolescent disruptive behavior disorders screening and rating scale based on DSM-IV (Turgay's scale-DBD-SRS)
This scale was developed according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criteria of ADHD, Oppositional Defiant Disorder (ODD), and Conduct Disorder by Turgay. Turkish validity and reliability study was conducted by Ercan and colleagues. It includes 41 questions assessing the following areas: 9 for attention deficit, 9 for hyperactivity and impulsivity, 9 for the oppositional defiant disorder, and 15 for conduct disorder. Each question is rated as 0= none, 1= some, 2= quite, or 3= much. Higher scores indicate greater severity [14].

Child behavior checklist (CBCL)-sluggish cognitive tempo subscale (SCT)
The CBCL is a screening tool for psychopathology that is based on parent reportings and consists of 118 items. Parents rated each question as 0=not true, 1=somewhat or sometimes true, or 2=very true or often true based on the presence of the symptom within the past 6 months. The CBCL provides two broad-band scales for externalizing and internalizing problems and narrow-band scales for specific symptom groups. We used the CBCL-SCT subscale for the assessment of SCT features. As

the frequency and severity of behaviors were rated with using Conners Rating Scales, we did not apply the other subscales of CBCL. The SCT subscale was derived from four items: (1) lacks energy, (2) confused, (3) daydreams, and (4) stares. The highest possible score on the subscale was 8 and the lowest possible score was 0. Measurement structure of the Turkish version has been performed and the internal consistency for the SCT subscale was α = 0.71 [13].

Conners rating scales revised- parent and teacher (CPRS-R, CTRS-R)

Conners Rating Scales-Revised scales for the parents (CPRS-R) and teachers (CTRS-R) were used. The CPRS-R has 80 items that require the parent to rate the frequency and severity of each behavior. The CPRS-R has seven subscales: Cognitive Problems-Inattention, Oppositional-Defiant behavior, Hyperactivity, Anxiety, Perfectionism, Social Problems and Psychosomatics subscales. Internal consistency was found to be 0.55 and 0.85, test-retest reliability was 0.42 and 0.74 [12]. CTRS-R has 59 items on a Likert scale and consists of six subscales: cognitive problems-inattention, oppositional-defiant behavior, hyperactivity, anxiety, perfectionism, and social problems subscales. Both CPRS-R and CTRS-S scales consist DSM-IV Index that includes DSM-IV diagnostic criteria, ADHD Index and Global Index as auxiliary tools to determine the presence of ADHD according to DSM-IV criteria. Internal consistency was found as 0.72 and 0.90, test-retest reliability was found as 0.49 and 0.99 [22].

Wechsler intelligence scale for children – revised form (WISC-R)

Verbal, performance, and total scores of the Wechsler Intelligence Scale for Children-Revised (WISC-R) were used to determine the intelligence levels of the children. Standardization of the WISC-R for Turkish children was performed by Savaşır and Şahin. The split-half reliability was 0.97 for verbal, 0.93 for performance sections, and 0.97 for total scores [27].

Procedure

The records of patients were scanned and the data used were gathered. According to our standard assessment procedure of ADHD outpatient clinic, firstly the patients and their parents who had been referred with symptoms related to ADHD were interviewed together at the initial visit, sociodemographic data were collected, and the scales were handed out to the parents. WISC-R tests were implemented by clinical psychologists.

The interviews conducted with parents and patients were performed by the child and adolescent psychiatrists to gather information about the detailed developmental

history and emotional/behavioral symptoms and standardized rating scales (CBCL 6-18, CPRS-R, CTRS-R) completed by parents and teachers were collected. Besides the scales, parents and patients were asked about symptoms at baseline and follow-up visits; responses were scored as 0 = no and 1 = yes (for example; "Does s/he have irritability," "Does s/he have academic problems"). It is considered "yes" if at least one said "yes."

The data analyzed in this study were collected by three experienced child and adolescent psychiatrists by reviewing the recorded information about patients. The accuracy of ADHD diagnosis was also evaluated according to the scales and symptoms of the patients. This study was evaluated and approved by the medical ethics committee of our university (İ05-193-19, 01.11.2019), and the protocols were in accordance with the Declaration of Helsinki.

Statistical analysis

The variables were investigated using visual (histograms, probability plots) and Kolmogorov Smirnov test to determine whether or not they are normally disturbed. The independent sample *t*-test was used to analyze group differences for parametric variables. The Mann-Whitney *U* test was used for nonparametric variables. The chi-square or Fisher's exact tests were used for categorical variables. When investigating the changes in the scales by SCT groups, the effect of gender was adjusted using two-way ANOVA. Statistical analyses were performed using SPSS version 22 (IBM SPSS Inc., Chicago, IL, USA) and *p*-values <0.05 were considered statistically significant.

Results

Sociodemographic and clinical features of groups

The patients were divided into 2 groups according to SCT scores. The proportion of girls was higher in the SCT scores ≥4 group than in other groups. Mann Whitney-U test was used to analyze the difference of mean age at which symptoms of ADHD were diagnosed and medication was offered and it was found that the mean age for both was significantly older in the SCT scores ≥4 group compared to the other group. There were also significant differences between the groups in terms of ADHD presentation and the presence of comorbid diagnosis evaluated by chi-square test. The outcomes are summarized in Table 1.

Scores of scales and WISC-R

Mann Whitney-U test was used to analyze the difference of the patients' scale scores and significant differences were found between the groups in terms of many CPRS-R subscales and CTRS-R scales. The scale scores associated with ADHD for both groups are shown in Table 2.

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Table 1 Associated features with ADHD for 2 groups

Group	SCT scores <4 (n=211)		SCT scores ≥4 (n=136)		p
	M/n	*SD/%*	*M/n*	*SD/%*	
Gender					
Girl	93	44.1	80	58.8	**0.007****
Boy	118	55.9	56	41.2	
Age at symptoms of ADHD recognized	6.86	2.01	7.28	2.29	.14
Age of ADHD diagnosis	7.59	1.76	8.11	2.13	**.01***
Who noticed ADHD symptoms first					
Family	55 26.1		42 30.9		.23
Teacher	81 38.4		47 34.6		
Together	73 34.6		46 33.9		
Age of medication onset for ADHD	7.7	1.69	8.27	2.04	**.006****
ADHD presentation					
Combined	141	66.8	77	56.6	**<.05***
Inattentive	67	31.8	59	43.4	**<.05***
Hyperactive/impulsive	3	1.4	0	0	**<.05***
Comorbid psychopathology					
Yes	135	64	106	77.9	**.006****
No	76	36	30	22.1	
Comorbid diagnosis					
Learning disorders	67	31.8	52	38.2	0.88
ODD/CD	9	4.3	6	4.4	
Anxiety	14	6.6	12	8.8	
Depression	3	1.4	7	5.1	
Intellectual disability	34	16.1	24	17.6	
Other	8	3.8	5	3.6	
Follow-up duration (years)	4.7	2.52	4.42	2.45	.3

ADHD attention deficit hyperactivity disorder, *ODD* oppositional defiant disorder, *CD* conduct disorder

* *p* <.05, ** *p* <.01

We investigated the gender effect on differences in scales of 2 groups using two-way ANOVA. We found that gender had an effect on CTRS-R anxiety scores but there is no effect on other scores. The outcomes were shown in Table 3.

Initial visit symptoms of both groups
The major symptoms of patients at the first visits were compared between the groups. There was no significant difference between the groups in terms of baseline symptoms. Compared to the other group, at the last visits, academic failure was more frequent in the group with SCT scores ≥4. The symptoms of ADHD for both groups are shown in Table 4.

Discussion
Due to the clinical heterogeneity, subtypes/presentations, namely, predominantly inattentive (ADHD-I), predominantly hyperactive-impulsive (ADHD-HI), and combined

(ADHD-C) presentations are determined for ADHD. On the other hand, although SCT was also described to be a subtype of ADHD-I, recent studies suggested that it may accompany ADHD as a separate disorder. Growing evidence distinguishing SCT from ADHD has shifted the focus of studies slightly to the frequency, comorbidity, cognitive dimension, treatment of SCT, and its effects on functionality [1, 2, 6, 31].

According to our findings, girls were more frequent, and the mean age of the sample was statistically elder in the ADHD group with SCT scores ≥4. Previous research indicated slightly higher SCT symptoms among boys than girls in childhood, but in adulthood, there was no difference between the two sexes in terms of the presentation of symptoms [1, 9, 29]. Some studies suggested that SCT was not associated with age and gender [1, 18], while a recent meta-analysis indicated that the mean age of children with both ADHD and SCT was older than that of children with ADHD [6]. Correspondingly,

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Table 2 Scale scores of participants according to SCT

Variables	SCT scores <4 (n=211)		SCT scores ≥4 (n=136)		p
	M	SD	M	SD	
DSM-IV-DBD-SRS – Inattention	13.81	6.12	16.03	9.62	.06
DSM-IV-DBD-SRS – Hyperactiviy	10.7	6.73	10	8	.28
DSM-IV-DBD-SRS – ODD	7.16	6.19	8.09	7.15	.61
DSM-IV-DBD-SRS – CD	1.59	3.46	1.35	2.96	.44
CPRS-R – Oppositional	11.38	7.49	13.79	7.15	**.01***
CPRS-R – Cognitive	17.26	8.3	20.81	7.47	**.002****
CPRS-R – Hyperactivity	11.26	6.48	11.76	6.61	.48
CPRS-R –Anxiety	7.09	4.95	10.25	5.22	**<.001****
CPRS-R – Perfectionism	5.27	4.02	7.2	4.03	**<.001****
CPRS-R – Social Problems	3.66	3.26	5.49	3.9	**<.001****
CPRS-R – Psychosomatic	3.48	3.98	6.18	5.62	**<.001****
CPRS-R – ADHD Index	19	8.44	21.78	8.2	**.03***
CPRS-R – Global Impulsivity	9.59	5	10.85	5.46	.13
CPRS-R -Global Emotional Lability	3.44	2.33	4.6	2.48	**<.001****
CPRS-R – Global Index- total	13.05	6.67	15.45	7.33	**.02***
CTRS-R- Oppositional	4.31	5	4.37	4.8	.88
CTRS-R –Cognitive	10.89	5.87	11.97	5.01	.11
CTRS-R – Hyperactivity	8.99	5.94	7.76	6.01	.1
CTRS-R – Anxiety	6.19	3.23	7.1	3.64	**.04***
CTRS-R – Perfectionism	3.02	3.15	4.09	3.79	**.04***
CTRS-R – Social	6.15	4.22	7.03	4.5	.16
CTRS-R – ADHD Index	17.82	8.73	16.67	8.51	.36
CTRS-R – Impulsivity	8.44	4.56	8.13	4.78	.46
CTRS-R – Emotional Lability	4.67	3.56	4.63	3.7	.82
CTRS-R – Global Index-total	11.77	6.7	11.45	7.02	.53
WISC-R – Verbal	84.05	19.57	81.13	18.79	.28
WISC-R – Performance	94.72	21.32	92.9	20.29	.53
WISC-R – Total	88.59	20.7	86.79	17.96	.44

DSM-IV-DBD-SRS Disruptive Behavior Disorders Screening and Rating Scale based on DSM-IV, *CPRS-R* Conners Rating Scales Revised-Parent, *CTRS-R* Conners Rating Scales Revised-Teacher, *CBCL* Child Behavior Checklist

* $p < .05$, ** $p < .01$

a study conducted in Turkey found that children with ADHD+SCT were much older than children with ADHD [8]. In another study, Baytunca et al. (2018) reported that the number of female patients in the SCT+ADHD group was significantly higher than the number in the ADHD group alone.

Current results showed that the frequency of high SCT scores among ADHD children was 39.1%, and additionally 43.4% of children with high SCT were compatible with ADHD-I, whereas 56.6% were accepted in the ADHD-C subtype group. Compared with ADHD-HI, ADHD-I type was indicated to be more consistent with SCT regarding to the studies focused on the association between ADHD types and SCT [18, 28]. Barkley [1] compared the healthy population, ADHD and SCT groups aged between 6 to 17 and showed that 2.3% of children had high SCT symptoms, 3.4% had ADHD and SCT symptoms, but 39% of ADHD children had high SCT symptoms, and 59% of high SCT children met the ADHD criteria. Additionally, among the high SCT group; predominant presentations of ADHD-I, ADHD-HI, and ADHD-C were found to be 22%, 8%, and 30%, respectively. Findings of the current study indicated that comorbidity was more common in the high SCT group. A study that has compared the frequency of neurodevelopmental disorders, learning disorders, and psychiatric disorders in ADHD, SCT, and control groups reported that comorbidity was significantly more frequent in the SCT group compared with controls [1]. On the other hand, comorbidity was higher in the presence of both ADHD and SCT than in the presence of each disorders seperately [1, 2, 15]. It is suggested that compared to ADHD, SCT symptoms were more related to internalizing symptoms and social problems [9, 10, 24]. Unlike a study that showed that symptoms associated with social difficulties were more apparent in teacher-reported scales, current findings indicated that those symptoms were more significant in parent scales [5]. Ultimately, however, they both point to the symptoms related with social problems recognized by the adults who interacted with those children.

Previous researches reported that compared to ADHD, SCT symptoms were more correlated with internalizing symptoms and social problems [3, 26, 28, 31]. According to the evaluation of CBCL parent and teacher scales of the current study, internalizing and externalizing symptoms were more frequent among the ADHD children who had SCT scores higher than four. A study from our country compared ADHD children with and without SCT symptoms and reported that in the group with SCT symptoms, introversion, and internalizing scores were higher whereas externalizing and aggression scores were lower [8]. On the other side, Barkley [1] reported no relationship between SCT and Oppositional Defiant Disorder (ODD), while Fenollar [15] suggested that if ADHD-related inattention was statistically controlled, a negative correlation would be found between SCT and ODD, but in the current study, SCT and ODD were found to be statistically associated regarding CBCL scores. The lack of comparison with a pure SCT group may have caused this discrepancy with the results in the literature. Recent studies suggested that the social problems of children with ADHD and ODD were associated with inappropriate responses to social stimuli, aggressive behaviors, difficulties in self-control, and being ostracized by peers, but the social problems of children with SCT symptoms were more related to social introversion

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Table 3 SCT symptoms and gender effect on scale scores

Subscales	Fixed Factors	SS	dF	MS	F	Sig
CPRS-R – Oppositional	SCT group	304.955	1	304.955	5.625	**.019***
	Gender	102.341	1	102.341	1.888	.171
	İnteraction	15.149	1	15.149	.279	.598
CPRS-R – Cognitive	SCT group	589.796	1	589.796	9.066	**.003****
	Gender	1.758	1	1.758	.027	.870
	Interaction	.195	1	.195	.003	.956
CPRS-R –Anxiety	SCT group	498.700	1	498.700	19.591	**<.001****
	Gender	28.207	1	28.207	1.108	.294
	Interaction	17.830	1	17.830	.700	.404
CPRS-R – Perfectionism	SCT group	175.486	1	175.486	10.754	**.001****
	Gender	1.853	1	1.853	.114	.736
	Interaction	6.942	1	6.942	.425	.515
CPRS-R – Social Problems	SCT group	152.565	1	152.565	12.298	**<.001****
	Gender	3.510	1	3.510	.283	.595
	Interaction	.451	1	.451	.036	.849
CPRS-R – Psychosomatic	SCT group	329.076	1	329.076	15.268	**<.001****
	Gender	15.468	1	15.468	.718	.398
	Interaction	4.310	1	4.310	.200	.655
CPRS-R – ADHD Index	SCT group	314.111	1	314.111	4.501	**.035***
	Gender	41.305	1	41.305	.592	.443
	Interaction	150.800	1	150.800	2.161	.143
CPRS-R – Global Emotional Lability	SCT group	65.518	1	65.518	11.411	**<.001****
	Gender	1.823	1	1.823	.317	.574
	Interaction	1.100	1	1.100	.192	.662
CPRS-R – Global Index- total	SCT group	304.532	1	304.532	6.346	**.013***
	Gender	72.901	1	72.901	1.519	.219
	Interaction	1.020	1	1.020	.021	.884
CTRS-R – Anxiety	SCT group	32.878	1	32.878	2.910	.089
	Gender	56.091	1	56.091	4.964	**.027***
	Interaction	1.569	1	1.569	.139	.710
CTRS-R – Perfectionism	SCT group	62.292	1	62.292	5.314	**.022***
	Gender	.900	1	.900	.077	.782
	Interaction	.623	1	.623	.053	.818

CPRS-R Conners Rating Scales Revised-Parent, *CTRS-R* Conners Rating Scales Revised-Teacher

* $p <.05$, ** $p <.01$

and isolation [6]. And also, the reasons for social impairment in SCT and ADHD have been suggested to be distinctive and separate from one another.

In the last assessment, academic failure has shown to be more frequent in the ADHD group with higher SCT scores. There is a study suggesting lower levels of academic competence in children with SCT even after controlling the symptoms of ADHD [24]. Another study found that SCT was negatively linked to academic achievement [20, 30]. In addition, it was suggested that children with ADHD and the concomitant symptoms of SCT may be less likely to respond to evidence-based medication and behavioral treatments for ADHD [16, 17].

Conclusıons
In summary, this study suggests that female gender and older age are more common in ADHD children manifesting high SCT symptoms. Moreover, both internalizing and externalizing symptoms and comorbidity were higher in that group. From a clinical perspective, our findings highlight the importance of detailed assessments in both diagnostic and follow-up processes, especially for girls with the manifestation of symptoms.

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Table 4 Baseline and follow-up symptoms of ADHD for two groups

	Baseline					Follow-up				
	SCT scores <4 Group (*n*=211)		SCT scores ≥4 Group (*n*=136)		*p*	SCT scores <4 Group (*n*=211)		SCT scores ≥4 Group (*n*=136)		*p*
	n	%	*n*	%		*n*	%	*n*	%	
No problem	-	-	-	-	0.77	91	43.1	50	36.8	.3
Inattention	62	29.4	39	28.7		54	25.6	23	16.9	.1
Hyperactivity	53	25.1	27	19.9		16	7.6	5	3.6	.3
Inattention and hyperactivity	-	-	-	-		7	3.3	8	5.9	.16
Irritability	17	8.1	8	5.9		21	10.5	18	9	.5
Academic Failure	42	19.9	38	28		20	9.5	29	21.3	**<.001****
Conduct problems	13	6.5	8	5.9		7	3.3	5	3.7	0.8

* *p* <.05, ** *p* <.01

ADHD attention deficit hyperactivity disorder

Due to the lack of clear diagnostic criteria, the assessment of SCT symptoms regarding scales reported by parents and teachers is a limitation of the current study. Other significant limitations include the retrospective pattern of the study, the absence of pure ADHD, and pure SCT groups. It is known that most of the SCT studies include a sample consisting of children referred to the clinics due to ADHD symptoms. This makes it difficult to examine the overlap or separation of both disorders. In conclusion, we aimed to highlight the appearance and clinical manifestation of ADHD and SCT together. Further research, including SCT children from the general population, may help us understand the SCT characteristics that accompany and differentiate ADHD.

Abbreviations

ADHD   Attention deficit hyperactivity disorder
SCT   Sluggish cognitive tempo
ODD   Oppositional defiant disorder
CD   Conduct disorder
ADHD-I   Attention deficit hyperactivity disorder predominantly inattentive
ADHD-HI   Attention deficit hyperactivity disorder predominantly hyperactive-impulsive and combined
ADHD-C   Attention deficit hyperactivity disorder combined
K-SADS-PL   Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime
Turgay's Scale-DBD-SRS The Child and Adolescent Disruptive Behavior Disorders Screening and Rating Scale based on DSM-IV
DSM-IV   Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition
CBCL   Child Behavior Checklist
CPRS-R, CTRS-R   Conners Rating Scales Revised- Parent and Teacher
WISC-R   Wechsler Intelligence Scale for Children-Revised

Declarations

Ethics approval and consent to participate
Written consent was obtained from parents and verbal assent was requested from children and adolescents to participate. This investigation was approved by the Ethical Committee of Ankara University (İ05-193-19, 01.11.2019).

Competing interests
The authors declare that they have no competing interests.

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