



Article

Emotional Regulation Problems in Cognitive Disengagement Syndrome (formerly Sluggish Cognitive Tempo), Attention Deficit and Hyperactivity Disorder, Anxiety and Depression

Almudena Cano-Crespo¹ , Inmaculada Moreno-García¹ , Mateu Servera²  and Manuel Morales-Ortiz¹ 

¹Universidad de Sevilla (Spain) and ²Universitat de les Illes Balears (Spain)

Abstract

Parents have reported emotional regulation problems in cognitive disengagement syndrome (CDS) and attention deficit and hyperactivity disorder (ADHD). The first objective of this research was to explore the differences between the parents' ratings on CDS, ADHD, hyperactivity/impulsivity, inattention, anxiety, depression and emotional dysregulation. The second one was to compare the predictive capacity of CDS and ADHD over anxiety, depression and emotional regulation problems. The third one was to analyze the mediation of emotional dysregulation in CDS, ADHD, hyperactivity/impulsivity, inattention, and anxiety and depression. The sampling used was non-probabilistic. The final sample consisted of 1,070 participants (484 fathers and 586 mothers) who completed the Emotion Regulation Checklist (ERC) and the Child and Adolescent Behavior Inventory (CABI). In relation to the first objective, first, mothers reported more emotional regulation problems in children than in fathers. Second, emotional regulation problems were more strongly correlated with hyperactivity/impulsivity. Significant differences were found in all father scores, except for anxiety and the emotional regulation subscale. Regarding mothers, significant differences were only observed in ADHD scores, hyperactivity/impulsivity, and depression. Both parents reported more problems in older children, except for hyperactivity/impulsivity scores and ADHD rated by mothers. According to the second objective, CDS scores were found to significantly predict anxiety and depression scores, but not those of inattention or emotional regulation problems. Finally, in relation to the third objective, emotional regulation problems mediated the relationships between CDS, ADHD, and anxiety and depression. In conclusion, the data support the importance of emotional regulation problems in understanding CDS and its relationship with ADHD, anxiety, and depression.

Keywords: ADHD; CDS; children; emotional regulation problems

(Received: 24 July 2023; revised: 23 July 2024; accepted: 27 August 2024)

One of the most recent reviews about the advances of attention deficit and hyperactivity disorder (ADHD) includes two domains that must be considered in this topic: Cognitive Disengagement Syndrome (CDS) and emotional regulation problems (Sonuga-Barke et al., 2022). CDS, previously known as sluggish cognitive tempo (SCT) (Becker et al., 2022; Fredrick & Becker, 2022, 2023), is characterized by excessive lethargy, drowsiness and mental fog (Becker, 2021; Becker & Barkley, 2018; Becker et al., 2022). On the other hand, emotional regulation problems are characterized by problems in understanding and properly managing one's own emotions and their intensity or duration (Gratz & Gunderson, 2006; Gratz & Roemer, 2004). Approximately half of the cases of children with ADHD and, in greater proportion, children with

hyperactivity /impulsivity (HI) show irritability or low frustration tolerance, social and academic problems, and worse quality of life (Faraone et al., 2019). Moreover, ADHD and emotional regulation problems have been linked to other symptoms, such as depression (DEP) and anxiety (ANX), and other academic problems associated with them (Voltas et al., 2014). On the other hand, CDS has been more strongly correlated with inattention (IN), social withdrawal and internalizing symptoms, especially DEP (Becker et al., 2016).

A particular association has been found between CDS and emotional regulation problems; specifically, Barkley (2012) explored the contribution of CDS and the different presentations of ADHD in emotional regulation problems. This author found that the emotional regulation problems reported by adults were partly due to CDS, IN and HI. However, they also observed that the strongest correlation was that between CDS and emotional regulation problems, since CDS explained 44.5% of the variance, whereas IN and HI only explained 1.4% and 7.7%, respectively (Barkley, 2012).

In the study of Becker and Luebbe (2015), the Child Concentration Inventory (CCI) was applied to 124 children aged 8–13 years. In the regression analyses, these authors identified that the self-reported measures of CDS were associated with lower emotional inhibition and greater emotional regulation problems

Corresponding author: Correspondence concerning this article should be addressed to Almudena Cano-Crespo. Universidad de Sevilla. Facultad de Psicología. Departamento de Personalidad, Evaluación y Tratamientos Psicológicos. Calle Camilo José Cela, s/n. 41018 Sevilla (Spain). E-mail: accrespo@us.es

Cite this article: Cano-Crespo, A., Moreno-García, I., Servera, M., & Morales-Ortiz, M. (2024). Emotional Regulation Problems in Cognitive Disengagement Syndrome (formerly Sluggish Cognitive Tempo), Attention Deficit and Hyperactivity Disorder, Anxiety and Depression. *The Spanish Journal of Psychology* 27, e20, 1–9. <https://doi.org/10.1017/SJP.2024.26>

© The Author(s), 2024. Published by Cambridge University Press on behalf of Universidad Complutense de Madrid and Colegio Oficial de la Psicología de Madrid. This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted re-use, distribution and reproduction, provided the original article is properly cited.

and expression. In a different sample with 76 children and adolescents aged 6–17 years, other authors obtained a significant correlation between CDS and emotional regulation problems, even after controlling for IN and HI (Araujo Jiménez et al., 2015). The study of Flannery et al. (2016) explored the relationship between CDS and emotional regulation problems, although, as opposed to the previously mentioned studies, these authors controlled for the effect of the symptoms of ADHD, ANX and DEP, due to the high correlation coefficients between these symptoms and CDS. In the study conducted by Jarrett et al. (2017) with 298 adolescents and young people aged 17–25 years, the participants completed self-reported questionnaires about ADHD, CDS and DEP. The results showed that CDS was correlated with DEP and emotional regulation problems. However, IN did not present any relationship with emotional regulation problems. Similarly, in a sample of 458 young people aged 18–24 years, a strong association was found between CDS and emotional regulation problems, even when controlling for the effects of DEP, ANX and ADHD (Wood et al., 2017).

Analyzing the agreement between fathers and mothers in the outcomes of CDS showed that 22% of the mothers included in the study sample reported that the children showed significantly elevated CDS symptoms, while 16% of the fathers did. Agreement between parents was moderate; however, they found that this was low between parents and teachers. More than one third of teachers reported elevated CDS symptoms in children. These findings could demonstrate that although parents may be more aware of the internalizing symptoms of the child, teachers may be more familiar with the cognitive component of CDS that is more present in the school setting. Therefore, in this paper the importance of including multi-informant ratings is enhanced not only in research but also in clinical practice (Mayes et al., 2023).

In relation to emotional regulation problems in children, no differences were found between fathers and mother ratings in some studies, but only moderate agreement was informed between child self-reports and parental reports. However, another possible explanation given by the authors is that the reduced sample size included in the study could interfere with the detection of differences (Loevaas et al., 2018). Furthermore, parents and teachers detected higher emotional regulation problems in children with elevated ADHD symptoms (Musser et al., 2018).

The general objective of the present study was to analyze the relationship between CDS, ADHD, ANX, DEP and emotional regulation problems in children rated by fathers and mothers separately. To this end, three specific objectives were set.

The first specific objective was to explore the differences between mother and father ratings of the CDS, ADHD, HI, IN, DEP, ANX and emotional regulation problems scores taking into account sex and age of the children. Convergence between the information of fathers and mothers was expected in all groups, based on a recent study conducted in a sample of similar characteristics and context (Moreno-García et al., 2022; Sáez et al., 2019).

The second objective aims to compare the unique predictive capacity of CDS, ADHD, HI and IN on ANX, DEP and emotional regulation problems in children rated by fathers and mothers. This was done controlling the variables of sex and age of children and based on the results obtained by Jarrett et al. (2017).

Lastly, the third specific objective was to analyze the mediation of emotional regulation problems on the relationship between CDS, ADHD, HI, IN, ANX and DEP in children rated by fathers and mothers. According to Flannery et al. (2016), emotional regulation problems could also be expected to act as a mediator in the relationship of CDS with other types of measures associated with CDS.

Method

Participants

A total of 1,471 families from 9 public and charter schools of the province of Seville (Spain) were invited to participate in the study. Their children were registered in Year 1–6 of Primary Education. The type of sampling used was non-probabilistic, by convenience. The final sample was constituted by 1,070 participants. They were parents (484 fathers and 586 mothers) of 521 children (271 boys and 250 girls) aged 7–13 years ($M = 9.99$, $SD = 1.43$). Children did not participate in this specific study.

Procedure

Ethics approval was obtained for research involving human participants from the Ethics Committee of the University of the Balearic Islands. The procedures used in this study adhere to the tenets of the Declaration of Helsinki. All the participating parents signed an informed consent form and completed the questionnaires.

Firstly, the researchers contacted schools, more specifically school principals and head teachers, to explain the study and obtain their permission to participate. Second, schools convened meetings so that researchers could explain the study to parents to resolve any doubts rose. Subsequently, the researchers went to schools to give the evaluation protocol and informed consent in an envelope to teachers/tutors who were the mediators between the researchers and parents. The parents returned the envelopes two weeks later. We verified that the questionnaires were completed by at least one of the parents to be considered in the present study.

Instruments

It should be clarified that the scores obtained in CDS, ADHD, HI, IN, ANX, DEP emotional regulation problems were based on self-reports completed by parents, not based on the clinical diagnosis of the children.

The families belonged to a medium socioeconomic level. The sociodemographic information was gathered from the parents' education level and professional, employment and marital status of the questionnaire for parents. In addition, they were asked to provide some specific information about their child, specifically, they were asked to indicate their date of birth and gender.

The following scales for parents were used in this study:

The Emotion Regulation Checklist (ERC) (Shields & Cicchetti, 1997) aims to collect information from parents about children's self-regulation of emotions. It consists of 23 items (item 12 is not rated for any of the scales) with a minimum score of 23 and maximum of 92. It consists of two subscales (it is indicated in parentheses the number of items and the minimum and maximum scores that can be obtained): (1) Lability/Negativity (LAB) (15 items) (15–60); (2) Emotional Regulation (REG) (8 items) (8–32). All items are evaluated from 1 to 4 ($1 = \text{never}$, $2 = \text{sometimes}$, $3 = \text{often}$, $4 = \text{always}$). The highest scores indicate more emotional regulation problems in the total scale (ERC), and by subscale, greater lability/negativity (LAB) and greater emotional dysregulation (REG). In this research a translation in Spanish is used. The reliability of the ERC subscales was .77 for LAB and .80 for REG and the validity of the application of the ERC was demonstrated with Spanish elementary school sample as shown in previous results (Lucas-Molina et al., 2022).

The Child and Adolescent Behavior Inventory (CABI) (Burns et al., 2015), validated in Spanish for parents¹, aims to collect information on different psychopathological dimensions of the child and adolescent population, as well as other areas of social and academic impairment. It is comprised of 9 dimensions (it is indicated in parentheses the number of items and the minimum and maximum scores that can be obtained): (1) Cognitive disengagement syndrome (CDS) (16 items) (0–75); (2) Anxiety (ANX) (6 items) (0–30); (3) Depression (DEP) (7 items) (0–35); (4) ADHD inattention (IN) (based on DSM–5 criteria) (9 items) (0–45); (5) ADHD hyperactivity-impulsivity (HI) (based on DSM-5 criteria) (9 items) (0–45); (6) Oppositional defiant disorder (ODD, based on DSM-5 criteria) (8 items) (0–40); (7) Limited prosocial emotions (LPE, based on the DSM-5) (4 items) (0–20); (8) Difficulties in academic performance (AS) (5 items) (0–30); (9) Social impairment (INT) (5 items) (0–30). The full scale consists of 69 items in total. All items are rated from 0 (the child almost never exhibits the problem behavior) to 5 points (almost always exhibits the problem behavior), except for the measures of difficulties in academic performance and social interaction which range from 0 to 6. In this study, only the items related to CDS, ADHD, HI, IN, ANX and DEP, were included. Cronbach's alpha was .71 and .95 for all scales, which demonstrated good reliability coefficients and the validity of the interpretations made of the scores obtained through the application of the CABI was also demonstrated as shown in previous results (Moreno-García et al., 2022).

Data Analysis

The R software v.4.2.2. was used for data handling, and the Jamovi program v.2.3.18 (The Jamovi Project, 2022) was employed for the analyses. For the first objective, descriptive and comparative analyses were conducted, analyzing the differences by sex and age in all measures. These two variables were also among the control variables. Specifically, this first objective was subdivided into three parts. First, a descriptive analysis was carried out for CDS, ADHD, HI, IN, ANX, DEP and emotional regulation problems showing the mean, standard deviation and data range according to sex and age of the children for each of the parent's measures. Second, these measures were correlated calculating the Pearson correlation coefficient. Third, the relationship between the scores obtained in the different subscales (CDS, HI, IN, ANX, DEP and emotional regulation problems) was analyzed, as well as the relationship between the total scores of CDS, ADHD, ANX, DEP and emotional regulation problems, through factor ANOVA, for the measures of fathers and mothers separately. For the second objective, regression models were performed for each of the parents, which were validated using bootstrap procedures using the R boot function (Canty & Ripley, 2022). A total of 1,000 iterations were carried out, and the confidence intervals were built for each of the parameters of each model. The model was considered validated if each of the parameters was included in its corresponding confidence interval. Lastly, to build the mediation models of the third objective, we applied the sum of the items of the measures of CDS, ADHD, HI, IN, ANX, DEP and emotional regulation problems of fathers and mothers. To estimate the parameters, the function was run through the R Mediation library (Tingley et al., 2014), using the bootstrap procedure with 1,000 iterations, and building the confidence intervals through the Bias-corrected and accelerated Bootstrap for Confidence Interval at

95% of the parameter estimation (BCa) method. Regression models included age and sex as control variables. The central limit theorem ensures that the assumptions are met when the sample size is large. However, confidence intervals were constructed using the bootstrap procedure and it was observed that the parameters were included within the interval, thus guaranteeing their validity. With this procedure, the confidence interval for the sample distribution of the statistic of interest (BCa interval) was found without making parametric assumptions.

Results

Regarding the first objective, it was subdivided into three parts. First, a descriptive analysis was carried out with CDS, ADHD, HI, IN, ANX, DEP, and emotional regulation problems scores for fathers and mothers, considering the age and sex of the children. The descriptive analyses show similar data between the different sex and age groups for each of the informants (fathers and mothers). Although the results are similar between evaluators, there is greater dissimilarity in the information related to emotional regulation problems in the total score of ERC and in the score obtained in the subscales LAB and, especially, REG. In the fathers, the mean reached in REG in girls ($M = 12.75$, $range = 8–20$) was similar to that obtained in boys ($M = 12.93$, $range = 8–21$), whereas these scores were higher when the evaluation was performed by the mother, although it was similar between girls ($M = 22.50$, $range = 17–27$) and boys ($M = 21.69$, $range = 16–30$). Table 1 presents the descriptive data for both parents.

Secondly, the correlations between CDS, ADHD, HI, IN, ANX, DEP, and emotional regulation problems were mostly significant and similar between fathers and mothers, except for the correlation between REG and ANX, which was not significant in the mothers. Both evaluators differed in the information related to emotional regulation problems in the score of the total scale (ERC) and in the different subscales (LAB and REG). On the one hand, in the measures of the fathers, the correlations ranged from $r = .12$ (between HI and REG) to $r = .92$ (between LAB and ERC). On the other hand, in the measures of the mothers, the correlations ranged from $r = -.18$ (between DEP and REG) to $r = .90$ (between ADHD and IN). In both cases, the effect sizes ranged mostly between moderate and large. However, in the case of the fathers, the relationships with ERC and LAB showed moderate and large effect sizes, and those with REG showed small effect sizes, whereas, in the case of the mothers, the effect sizes were small in REC and LAB and non-significant for REG. The greatest proportion of significant relationships with large effect sizes was found for DEP, ADHD and IN with the rest of the measures, except for emotional regulation problems, since the mothers obtained smaller effect sizes. Table 2 presents the correlations for the two parents.

Thirdly, the differences by sex and age were analyzed in all measures of fathers and mothers separately. No significant interactions between age and sex were found in this case. In regard with the evaluations of the fathers, CDS showed significant differences in sex, $F(1, 468) = 4.20$, $p = .04$, $\eta^2_p = .009$, since the boys presented higher scores than the girls in CDS ($p = .04$), 95% CI [0.08, 3.60]. Significant differences for the variable age were also found in DEP, $F(2, 477) = 3.13$, $p = .045$, $\eta^2_p = .01$. Thus, the older children presented higher scores in DEP than the younger children. Specifically, the post-hoc analyses showed that the children who belonged to the age group older than 10.2 years obtained higher scores than those who belonged to the group with ages between 8.9 and 10.2 years ($p = .045$). With respect to the measure of ADHD (HI + IN),

¹<https://tinyurl.com/CABI-Spanish>

Table 1. Descriptive Measures of Parents' Measures of CDS, Emotional Regulation Problems and Other Measures Distributed according to Sex and Age of the Children

	Fathers											
	7–8.9 years old				8.9–10.2 years old				10.2–13 years old			
	Girls		Boys		Girls		Boys		Girls		Boys	
	M(SD)	Range	M(SD)	Range	M(SD)	Range	M(SD)	Range	M(SD)	Range	M(SD)	Range
CDS	6.67(9.36)	0–40	9.50(10.56)	0–48	7.24(10.16)	0–57	7.59(8.97)	0–47	7.08(8.25)	0–34	9.45(10.34)	0–62
HI	8.27(8.20)	0–31	13.95(10.19)	0–38	7.37(8.04)	0–38	11.91(10.03)	0–39	7.22(8.33)	0–42	8.74(9.08)	0–42
IN	10.26(9.42)	0–40	13.23(10.05)	0–38	8.77(9.54)	0–41	11.38(10.20)	0–44	8.22(9.67)	0–39	11.36(9.78)	0–45
ANX	4.05(3.93)	0–19	5.29(4.03)	0–20	3.55(4.31)	0–22	3.71(3.46)	0–13	3.99(4.52)	0–22	3.83(3.31)	0–16
DEP	2.67(4.81)	0–22	2.89(3.88)	0–21	1.46(3.11)	0–19	2.45(3.83)	0–22	2.76(4.21)	0–24	3.33(4.91)	0–26
ERC	40.92(7.82)	26–60	44.28(6.63)	30–61	40.86(6.78)	27–60	41.07(7.74)	27–64	41.96(8.23)	28–63	43.77(8.13)	26–67
LAB	26.57(5.57)	16–43	29.29(5.20)	18–46	26.14(4.79)	15–40	26.64(5.57)	15–42	26.42(6.10)	16–45	28.38(5.62)	17–44
REG	12.75(3.33)	8–20	12.93(3.12)	8–21	13.05(3.14)	8–24	12.92(3.13)	8–20	13.75(3.43)	8–22	13.62(3.39)	8–25
	Mothers											
	7–8.9 years old				8.9–10.2 years old				10.2–13 years old			
	Girls		Boys		Girls		Boys		Girls		Boys	
	M(SD)	Range	M(SD)	Range	M(SD)	Range	M(SD)	Range	M(SD)	Range	M(SD)	Range
CDS	7.48(9.63)	0–52	9.17(10.18)	0–48	8.06(9.59)	0–41	9.24(9.75)	0–47	9.02(11.52)	0–66	10.75(11.45)	0–59
HI	8.25(7.72)	0–28	14.15(10.20)	0–40	9.03(9.55)	0–41	12.63(11.11)	0–42	7.83(9.35)	0–42	9.53(10.08)	0–42
IN	10.10(10.03)	0–45	12.41(10.79)	0–38	9.51(8.84)	0–39	12.85(10.53)	0–43	9.57(11.29)	0–45	12.74(10.50)	0–45
ANX	4.24(4.06)	0–18	4.27(4.26)	0–17	3.64(4.16)	0–24	4.24(4.02)	0–17	4.52(4.91)	0–24	4.21(4.14)	0–25
DEP	2.23(3.31)	0–14	2.92(4.01)	0–21	1.84(2.93)	0–18	3.57(4.51)	0–24	3.15(5.32)	0–35	3.83(5.60)	0–28
ERC	53.58(4.23)	43–63	53.35(4.81)	38–64	53.17(5.65)	41–70	53.43(5.15)	27–63	53.32(5.44)	37–66	53.32(4.93)	39–67
LAB	29.10(3.57)	22–42	29.75(4.14)	19–38	29.09(3.70)	21–40	29.34(4.37)	15–41	29.28(3.72)	17–37	29.57(3.83)	22–43
REG	22.50(2.63)	17–27	21.69(2.65)	16–30	22.11(2.84)	15–28	22.73(2.76)	11–28	22.28(3.12)	15–27	22.28(2.45)	15–27

Note. CDS = Cognitive Disengagement Syndrome; HI = hyperactivity/ impulsiveness; IN = inattention; ANX = anxiety; DEP = depression; ERC = Emotion Regulation Checklist; LAB = Liability/Negativity; REG = Emotional Regulation.

significant differences were obtained in the sex variable, $F(1, 473) = 16.75, p < .001, \eta^2_p = .03$; specifically, the boys showed more ADHD than the girls, ($p < .001$), 95% CI [3.30, 9.38]. This was also observed in the variable age, $F(2, 473) = 3.43, p = .03, \eta^2_p = .01$, with the post-hoc analyses showing that the children aged over 10.2 years obtained higher scores in ADHD than the children aged 6.34–8.9 years ($p = .03$). In regard with HI, significant differences were detected in sex, $F(1, 476) = 22.31, p < .001, \eta^2_p = .045$, and age, $F(2, 476) = 4.80, p = .01, \eta^2_p = .02$. The boys showed more HI than the girls ($p < .001$), 95% CI [2.29, 5.55]. The post-hoc tests revealed that the children aged over 10.2 years obtained lower scores in HI than the children aged between 6.34 and 8.9 years ($p = .01$). IN also presented significant differences in sex, $F(1, 473) = 10.26, p = .001, \eta^2_p = .02$, with the boys obtaining higher scores ($p = .001$), 95% CI [1.12, 4.69]. In ERC, significant differences were found in sex, $F(1, 442) = 5.47, p = .02, \eta^2_p = .01$, since the boys presented higher scores ($p = .02$), 95% CI [0.27, 3.12]. In LAB, significant differences were also identified in sex, $F(1, 464) = 11.23, p < .001, \eta^2_p = .02$, since the boys showed more LAB ($p < .001$), 95% CI [0.72, 2.74] than the girls. No significant differences were obtained in ANX or REG. Regarding the evaluations of the mothers, significant differences were only obtained in DEP, ADHD and HI. In DEP, significant differences were detected in sex, $F(1, 570) = 7.40, p = .01, \eta^2_p = .01$. The scores in DEP were higher in the boys ($p = .01$), 95% CI

[0.29, 1.78] than in the girls. In relation to ADHD, there were significant differences in age, $F(2, 569) = 3.98, p = .02, \eta^2_p = .01$, and sex, $F(1, 569) = 20.66, p < .001, \eta^2_p = .04$. The children over 10.2 years of age presented lower values in ADHD than the children aged under 8.9 years ($p = .04$), and the boys obtained higher scores than the girls ($p < .001$), 95% CI [2.12, 5.35]. HI also revealed significant differences in sex, $F(1, 569) = 20.66, p < .001, \eta^2_p = .04$, and age $F(2, 569) = 3.98, p = .02, \eta^2_p = .01$. The boys reached higher HI levels than the girls ($p < .001$), 95% CI [2.12, 5.35]. The children aged over 10.2 years obtained lower scores in HI than the children aged under 8.9 years ($p = .04$). The measures of CDS, ANX, IN, ERC, LAB and REG did not present significant differences.

With respect to the second objective, the regression models were validated, since the parameters obtained in each model were included within the confidence intervals that corresponded to their values. Tables 3 and 4 present the partial standardized regression coefficients for CDS, HI and IN, and for CDS and ADHD, respectively, on the scores of the other measures for each of the evaluators (father and mother), controlling for the effect of sex and age. The evaluations of both informants were mostly similar, except in those related to emotional regulation problems (ERC, LAB and REG). In Table 2, after controlling for sex and age, in the fathers, CDS significantly explained the scores in DEP with a moderate effect size, whereas HI had no explanatory capacity. In the mothers, the

Table 2. Correlations between the Measures of Fathers and Mothers in CDS, Emotional Regulation Problems and other Measures

	Fathers									
	CDS	ADHD	HI	IN	ANX	DEP	ERC	LAB	REG	
CDS	–	.67***	.44***	.76***	.43***	.58***	.37***	.37***	.22***	
ADHD	.67***	–	.90***	.91***	.45***	.57***	.52***	.61***	.17***	
HI	.44***	.90***	–	.65***	.37***	.44***	.48***	.59***	.12***	
IN	.76***	.91***	.65***	–	.44***	.59***	.46***	.51***	.18***	
ANX	.43***	.45***	.37***	.44***	–	.57***	.43***	.43***	.24***	
DEP	.58***	.57***	.44***	.59***	.57***	–	.53***	.49***	.38***	
ERC	.37***	.52***	.48***	.46***	.43***	.53***	–	.92***	.72***	
LAB	.37***	.61***	.59***	.51***	.43***	.49***	.92***	–	.40***	
REG	.22***	.17***	.12***	.18***	.24***	.38***	.72***	.40***	–	

	Mothers									
	CDS	ADHD	HI	IN	ANX	DEP	ERC	LAB	REG	
CDS	–	.69***	.45***	.75***	.44***	.57***	.10***	.17***	-.09*	
ADHD	.69***	–	.89***	.90***	.43***	.52***	.26***	.40***	-.12**	
HI	.45***	.89***	–	.60***	.35***	.38***	.29***	.42***	-.10*	
IN	.75***	.90***	.60***	–	.43***	.55***	.19***	.30***	-.11*	
ANX	.44***	.43***	.35***	.43***	–	.51***	.12***	.18***	-.13	
DEP	.57***	.52***	.38***	.55***	.51***	–	.13***	.27***	-.18***	
ERC	.10***	.26***	.29***	.19***	.12***	.13***	–	.84***	.61***	
LAB	.17***	.40***	.42***	.30***	.18***	.27***	.84***	–	.10*	
REG	-.09*	-.12**	-.10*	-.11*	-.13	-.18***	.61***	.10*	–	

Note. CDS = Cognitive Disengagement Syndrome; ADHD = Attention Deficit and Hyperactivity Disorder; HI = hyperactivity/impulsivity; IN = inattention; ANX = anxiety; DEP = depression; ERC = Emotion Regulation Checklist; LAB = Liability/Negativity; REG = Emotional Regulation.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3. Standardized Partial Regression Coefficients of the Measures of CDS, HI and IN of Mothers and Fathers on the measures of ANX, DEP and Emotional Regulation Problems

	Fathers							Mothers						
	R^2 adj	CDS	BCa	HI	BCa	IN	BCa	R^2 adj	CDS	BCa	HI	BCa	IN	BCa
ANX	.22	.11***	[.04, .17]	.06**	[.007, .12]	.05	[-.008, .12]	.23	.12***	[.05, .19]	.06**	[.01, .11]	.06	[-.01, .13]
DEP	.41	.16***	[.09, .23]	.05	[-.01, .11]	.09***	[.03, .18]	.37	.15***	[.10, .21]	.04*	[.003, .09]	.10***	[.05, .19]
ERC	.28	.05	[-.06, .16]	.31***	[.20, .41]	.14*	[.02, .28]	.08	-.05	[-.11, .02]	.15***	[.10, .20]	.05	[-.02, .12]
LAB	.38	-.01	[-.08, .07]	.29***	[.22, .36]	.13***	[.05, .23]	.18	-.05	[-.10, -.008]	.16***	[.12, .20]	.06*	[.01, .11]
REG	.06	.06**	[.09, .22]	.03	[-.01, .10]	-.002	[.03, .17]	.01	-.0004	[-.03, .03]	-.02	[-.05, .01]	-.02	[-.06, .02]

Note. CDS = Cognitive Disengagement Syndrome; ADHD = Attention Deficit and Hyperactivity Disorder; HI = hyperactivity/impulsivity; IN = inattention; ANX = anxiety; DEP = depression; ERC = Emotion Regulation Checklist; LAB = Liability/Negativity; REG = Emotional Regulation; BCa = Bias-corrected and accelerated Bootstrap for Confidence Interval at 95% of the parameter estimation; R^2 adj = R^2 adjusted.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

same tendency was observed, although, in HI, the predictive capacity was low. HI significantly explained ERC and LAB with a large effect size, while this effect in the mothers was moderate. In Table 3, in fathers and mothers, after controlling for sex and age, CDS significantly explained the scores in DEP with a moderate effect size, although ADHD presented a small predictive capacity. However, ADHD significantly and moderately predicted ERC and LAB only in the fathers. No significant correlations were found between age and sex, except in

the measure of DEP in the fathers when HI and IN were considered separately ($\beta = .41, p < .05$) and jointly ($\beta = .43, p < .05$).

Finally, with regard to the third objective, causal mediation analyses were carried out, validating these results with the bootstrap procedure. The fathers showed significant indirect effects of emotional regulation problems, both in ERC (total score of the scale) and in the subscales LAB and REG, on the relationship between CDS, ADHD, HI and IN, and in the relationship between ANX and

Table 4. Standardised Partial Correlation Coefficients of the Measures of CDS and ADHD of Mothers and Fathers on the Measures of ANX, DEP and Emotional Regulation Problems

	Fathers					Mothers				
	R^2 adj	CDS	BCa	ADHD	BCa	R^2 adj	CDS	BCa	ADHD	BCa
ANX	.23	.10***	[.04, .16]	.06***	[.03, .09]	.23	.12***	[.06, .19]	.06***	[.02, .09]
DEP	.41	.17***	[.11, .23]	.07***	[.05, .10]	.37	.17***	[.12, .21]	.07***	[.05, .10]
ERC	.29	.01	[-.08, .10]	.24***	[.19, .30]	.08	-.08	[-.13, -.02]	.11***	[.08, .14]
LAB	.38	-.05	[-.13, .01]	.22***	[.18, .26]	.17	-.08	[-.12, -.03]	.12***	[.09, .14]
REG	.07	.05*	[.11, .23]	.02*	[.05, .09]	.01	-.0004	[-.03, .03]	-.02	[-.04, -.001]

Note. CDS = Cognitive Disengagement Syndrome; ADHD = Attention Deficit and Hyperactivity Disorder; ANX = anxiety; DEP = depression; ERC = Emotion Regulation Checklist; LAB = Liability/Negativity; REG = Emotional Regulation; BCa = Bias-corrected and accelerated Bootstrap for Confidence Interval at 95% of the parameter estimation; R^2 adj = R^2 adjusted.
* $p < .05$. ** $p < .01$. *** $p < .001$.

DEP. In regard with the measures of the mothers, only some significant mediations were observed. Specifically, an indirect effect of CDS was identified through LAB on ANX and DEP, and through REG on DEP. LAB was also detected as a mediator on the relationship between IN and DEP, and REG mediated the relationship between HI and DEP. LAB and REG showed an indirect effect on HI and DEP. Lastly, REG showed a mediator effect on ADHD and DEP. Table 5 presents the mediation of the emotional regulation problems on the relationship between CDS, ADHD ANX and DEP of both parents.

Discussion

This study analyzed the relationship between CDS, ADHD, HI, IN, ANX, DEP and emotional regulation problems in children rated by fathers and mothers separately.

Regarding the first objective, after conducting the descriptive analyses, similar data were observed between the different groups for both fathers and mothers, which is in line with previous research in similar samples (Moreno-García et al., 2022; Sáez et al., 2019). However, differences were found in the information between fathers and mothers, since the mothers reported more emotional regulation problems, with higher scores in ERC. These results are in agreement with those obtained in the studies of

Alakortes et al. (2015) and Duhig et al. (2000), who observed that the scores between the evaluations of fathers and mothers were similar, although the mothers reported more emotional regulation problems than the fathers. Moreover, our data indicate that this discrepancy was greater in the subscale REG, as has been previously reported by other authors (Loevaas et al., 2018) who applied the same instrument in a sample of children aged 8–12 years.

Secondly, the correlations between CDS, ADHD, HI, IN, ANX, DEP, and emotional regulation problems were performed for both evaluators. In our case, most of the correlations were significant, as in the study conducted by Loevaas et al. (2018), although the present study found that the correlation between ANX and REG in the mothers was not significant. Similarly, the coefficients related to LAB did not coincide, since these authors found higher maximum scores compared to the data obtained in the present study. Moreover, in line with Faraone et al. (2019), we found that the association for emotional regulation problems was stronger with ADHD than with CDS, and, within ADHD, the correlation was even stronger with HI than with IN.

Thirdly, in relation to the analyses of the differences by sex and age in the measures of the fathers and mothers, more emotional regulation problems were detected in the boys compared to the girls, which is in line with the findings of Onchwari and Keengwe

Table 5. Mediation of Emotional Regulation Problems on the Relationship between CDS, ADHD, ANX and DEP of Mothers and Fathers

	Fathers						Mothers					
	ERC		LAB		REG		ERC		LAB		REG	
	ACME	BCa	ACME	BCa	ACME	BCa	ACME	BCa	ACME	BCa	ACME	BCa
CDS and ANX	.05***	[.03, .07]	.05***	[.03, .07]	.01***	[.004, .02]	.01	[.00, .01]	.01***	[.004, .02]	.00	[-.00, .01]
CDS and DEP	.05***	[.03, .07]	.04***	[.03, .06]	.02***	[.008, .03]	.003	[-.00, .01]	.01**	[.01, .03]	.006*	[.001, .02]
ADHD and ANX	.03***	[.02, .05]	.04***	[.02, .05]	.005*	[.001, .01]	.002	[-.003, .01]	.002	[-.008, .01]	.002	[-.001, .01]
ADHD and DEP	.03***	[.02, .05]	.03***	[.02, .05]	.009**	[.003, .02]	-.001	[-.01, .00]	.006	[-.004, .02]	.005**	[.002, .01]
HI and ANX	.07***	[.04, .10]	.08***	[.05, .12]	.009*	[.002, .02]	.01	[-.01, .02]	.01	[.01, .03]	.004	[-.001, .02]
HI and DEP	.08***	[.06, .11]	.08***	[.06, .12]	.02*	[.004, .03]	.00	[-.01, .02]	.02*	[.002, .05]	.01**	[.004, .02]
IN and ANX	.05***	[.03, .07]	.06***	[.04, .09]	.009**	[.002, .02]	.01	[-.00, .02]	.01	[-.00, .02]	.003	[-.00, .01]
IN and DEP	.06***	[.04, .08]	.05***	[.03, .07]	.01**	[.004, .03]	.002	[-.01, .01]	.02*	[.003, .03]	.008**	[.002, .02]

Note. CDS = Cognitive Disengagement Syndrome; ADHD = Attention Deficit and Hyperactivity Disorder; HI = hyperactivity/impulsivity; IN = inattention; ANX = anxiety; DEP = depression; ERC = Emotion Regulation Checklist; LAB = Liability/Negativity; REG = Emotional Regulation; BCa = Bias-corrected and accelerated Bootstrap for Confidence Interval at 95% of the parameter estimation; ACME = Average Causal Mediation Effects.
* $p < .05$. ** $p < .01$. *** $p < .001$.

(2011), who identified that the girls presented less emotional regulation problems than the boys, possibly due to a different state of evolutionary development. Furthermore, regarding the different age groups, the children aged over 10.2 years presented more emotional regulation problems, except for HI in fathers, and HI and ADHD in mothers. These results are in agreement with those of Sanchis-Sanchis et al. (2020), who observed that the older children, near adolescence, showed more emotional regulation problems, since, within the repertoire of emotional regulation strategies they had, they may not have selected the most adequate to the proposed situation, probably due to the fact that, according to the study of Silva et al. (2018), adolescents select the strategy that fits their emotional state.

With regard to the second objective, after comparing the predictive capacity of CDS and ADHD on the rest of the measures, as expected, CDS predicted DEP and ANX in a greater proportion (considering HI and IN both separately and jointly). Although the coefficients were lower, our findings are in agreement with those reported by Becker et al. (2016), Moreno-García et al. (2022) and Sáez et al. (2019), who concluded that CDS was strongly associated with the internalizing symptoms. However, with respect to emotional regulation problems (ERC, LAB and REG), neither CDS nor IN predicted emotional regulation problems, in contrast with the results of Araujo Jiménez et al. (2015), who identified that CDS predicted emotional regulation problems even after controlling for IN and HI, as well as those of Jarrett et al. (2017), who also reported on this relationship between CDS, emotional regulation problems and DEP. Nevertheless, none of these authors reported a correlation between IN and emotional regulation problems, which is in line with our results.

Lastly, in regard with the third objective, mediation analyses were conducted for emotional regulation problems on the relationship between CDS, ADHD, HI, IN, ANX and DEP, obtaining significant indirect effects of ERC, LAB and REG as mediators. Although no studies were found to analyze all these variables in a single procedure, Flannery et al. (2016) concluded that there was a significant inhibitory effect of emotional regulation problems on the relationship between CDS and social difficulties. This mediation of emotional regulation problems occurred even after controlling for the effects of other variables, such as age, ADHD, ANX and DEP. Moreover, Seymour et al. (2014) explored the mediator role of emotional regulation problems on the relationship between ADHD and DEP in a sample of school children aged 9–12 years, and their data are in line with those obtained in the present study, since they found a significant indirect effect of emotional regulation problems on ADHD and DEP. Similarities were also observed with the results of these authors about the existence of a significant indirect effect of the total score of the emotional regulation problems (ERC) on the relationship between IN and DEP, and a greater indirect effect of the total score of the emotional regulation problems (ERC) on the relationship between HI and DEP.

To conclude, this study explored the role of emotional regulation problems in their relationship with CDS, ADHD, ANX and DEP. Similar data were observed between the different groups by sex and age for both evaluators in all measures, although the mothers reported more emotional regulation problems. The results confirm the relationship between emotional regulation problems, CDS, ADHD, ANX and DEP. However, the strongest association between measures was observed between the total score of the emotional regulation problems (ERC) and ADHD, more specifically between ERC and HI. The older children presented more emotional regulation problems, except for HI in fathers, and ADHD and HI in mothers. Moreover, the scores of CDS

significantly predicted ANX and DEP, although no significant predictive capacity was observed between CDS and emotional regulation problems (ERC, LAB and REG scores), or between IN and emotional regulation problems. Finally, it was verified that emotional regulation problems acted as a mediator in the relationships between CDS, ADHD, ANX and DEP. Consequently, this work provides information about the functioning of these symptoms, thereby contributing to the understanding of the transdiagnostic value of emotional regulation problems and its relationship with CDS and ADHD.

One of the main contributions of this manuscript is to provide data on CDS and emotional regulation problems, since, as a recent review on the subject (Sonuga-Barke et al., 2022) comments, there is still not much literature on the subject and they would be part of the characterization of ADHD, given that they could be considered as part of the diagnostic criteria or specifiers of this disorder. Therefore, the results of this manuscript would shed light not only on the nosology of ADHD, but also on the consideration of emotional regulation in the deficits that are also shown particularly in CDS. This would confirm the existence of the relationship between CDS, ADHD, and emotional regulation problems and also with other related psychopathological measures such as ANX and DEP. The information provided on the functioning of these symptoms contributes to understanding the transdiagnostic value of emotional regulation problems and their relationship with CDS and ADHD. The practical usefulness of this study would also lie in a better approach to the assessment of the different symptoms presented by children in the clinical practice, since it is shown that these symptoms or disorders are closely related, especially, according to the findings of this article, among older children and among problems of emotional regulation, ADHD, and HI. This work would also confirm the importance of including both parents in the assessment of children's psychopathological disorders or symptoms, since, although the assessment would be mostly convergent, it would provide two complementary perspectives that delve deeper into the children's problems. As a consequence, the information gathered in this manuscript could serve as a basis for providing a more focused treatment for each of the children's symptoms.

Among the limitations of this work, it is worth highlighting the restriction of the sample to school children. This type of research would benefit from a larger clinical sample with more extreme presentations of ANX, DEP, emotional regulation problems and other psychopathological measures. In this sense, it would be interesting to increase the age range and expand it to the stage of late adolescence, with the aim of obtaining further information about the evolutionary changes associated with the symptoms and variables of interest. Thus, future research lines should incorporate these changes, encompassing the stages of Primary Education, Secondary Education, Baccalaureate and the clinical scope. Furthermore, it would also be interesting to include teachers as evaluators from outside the intrafamily context, as well as other measures related to executive or neuropsychological functions, with the aim of delving into the variables involved in the present study.

Data sharing. Not applicable.

Acknowledgements. The authors thank the Agencia Estatal de Investigación, Ministerio de Ciencia e Innovación del Gobierno de España y Fondo Europeo de Desarrollo Regional (PSI2017–82550–R), the Ministerio de Universidades del Gobierno de España (Project FPU19/00996) and the Open Access publishing agreement between Cambridge and the Universidad de Sevilla for the funding of this article.

Authorship credit. All authors contributed to the conceptualization, methodology, validation, formal analysis, investigation, resources, data curation, writing—original draft preparation, writing—review and editing, visualization, supervision, project administration, and funding acquisition. All authors have read and agreed to the published version of the manuscript.

Funding statement. This research study has been funded by the Agencia Estatal de Investigación, Ministerio de Ciencia e Innovación del Gobierno de España y Fondo Europeo de Desarrollo Regional (PSI2017–82550–R), and the Ministerio de Universidades del Gobierno de España (Project FPU19/00996).

Conflicts of interest. None.

References

- Alakortes, J., Fyrstén, J., Carter, A. S., Moilanen, I. K., & Ebeling, H. E. (2015). Finnish mothers' and fathers' reports of their boys and girls by using the brief infant-toddler social and emotional assessment (BITSEA). *Infant Behavior and Development*, *39*, 136–147. <https://doi.org/10.1016/j.infbeh.2015.02.016>
- Araujo Jiménez, E. A., Jané Ballabriga, M. C., Bonillo Martín, A., Arrufat, F. J., & Serra Giacobbo, R. (2015). Executive functioning in children and adolescents with symptoms of sluggish cognitive tempo and ADHD. *Journal of Attention Disorders*, *19*(6), 507–514. <https://doi.org/10.1177/1087054713495442>
- Barkley, R. A. (2012). Distinguishing sluggish cognitive tempo from attention-deficit/hyperactivity disorder in adults. *Journal of Abnormal Psychology*, *121*(4), 978–990. <https://doi.org/10.1037/a0023961>
- Becker, S. P. (2021). Systematic review: Assessment of sluggish cognitive tempo over the past decade. *Journal of the American Academy of Child and Adolescent Psychiatry*, *60*(6), 690–709. <https://doi.org/10.1016/j.jaac.2020.10.016>
- Becker, S. P., & Barkley, R. A. (2018). Sluggish cognitive tempo. In T. Banaschewski, D. Coghill, & A. Zuddas (Eds.), *Oxford textbook of attention deficit hyperactivity disorder* (Vol. 13, pp. 147–153). Oxford University Press. <http://doi.org/10.1093/med/9780198739258.003.0015>
- Becker, S. P., Leopold, D. R., Burns, G. L., Jarrett, M. A., Langberg, J. M., Marshall, S. A., McBurnett, K., Waschbusch, D. A., & Willcutt, E. G. (2016). The internal, external, and diagnostic validity of sluggish cognitive tempo: A meta-analysis and critical review. *Journal of the American Academy of Child & Adolescent Psychiatry*, *55*(3), 163–178. <https://doi.org/10.1016/j.jaac.2015.12.006>
- Becker, S. P., Luebke, A. M., & Joyce, A. M. (2015). The Child Concentration Inventory (CCI): Initial validation of a child self-report measure of sluggish cognitive tempo [Supplemental Material]. *Psychological Assessment*, *27*(3), 1037–1052. <https://doi.org/10.1037/pas0000083.supp>
- Becker, S. P., Willcutt, E. G., Leopold, D. R., Fredrick, J. W., Smith, Z. R., Jacobson, L. A., Burns, G. L., Mayes, S. D., Waschbusch, D. A., Froehlich, T. E., McBurnett, K., Servera, M., & Barkley, R. A. (2022). Report of a work group on sluggish cognitive tempo: Key research directions and a consensus change in terminology to cognitive disengagement syndrome. *Journal of the American Academy of Child & Adolescent Psychiatry*, *62*, 629–645. <https://doi.org/10.1016/j.jaac.2022.07.821>
- Burns, G. L., Lee, S., Servera, M., McBurnett, K., & Becker, S. P. (2015). *Child and Adolescent Behavior Inventory - Parent Version 1.0*. Author.
- Canty, A., & Ripley, B. D. (2022). *Boot: Bootstrap r (s-plus) functions* (R Package Version 1.3–28.1) [Computer software]. <https://cran.r-project.org/web/packages/boot/boot.pdf>
- Duhig, A. M., Renk, K., Epstein, M. K., & Phares, V. (2000). Interparental agreement on internalizing, externalizing, and total behavior problems: A meta-analysis. *Clinical Psychology: Science and Practice*, *7*(4), 435–453. <https://doi.org/10.1093/clipsy.7.4.435>
- Faraone, S. V., Rostain, A. L., Blader, J., Busch, B., Childress, A. C., Connor, D. F., & Newcorn, J. H. (2019). Practitioner review: Emotional dysregulation in attention-deficit/hyperactivity disorder – Implications for clinical recognition and intervention. *The Journal of Child Psychology and Psychiatry and Allied Disciplines*, *60*(2), 133–150. <https://doi.org/10.1111/jcpp.12899>
- Flannery, A. J., Becker, S. P., & Luebke, A. M. (2016). Does emotion dysregulation mediate the association between sluggish cognitive tempo and college students' social impairment? *Journal of Attention Disorders*, *20*(9), 802–812. <https://doi.org/10.1177/1087054714527794>
- Fredrick, J. W., & Becker, S. P. (2022). Cognitive disengagement syndrome (sluggish cognitive tempo) and social withdrawal: Advancing a conceptual model to guide future research. *Journal of Attention Disorders*, *27*, 38–45. <https://doi.org/10.1177/10870547221114602>
- Fredrick, J. W., & Becker, S. P. (2023). Sluggish cognitive tempo (cognitive disengagement syndrome) and academic functioning: A systematic review and agenda for future research. *Clinical Child and Family Psychology Review*, *26*(1), 82–120. <https://doi.org/10.1007/s10567-022-00411-6>
- Gratz, K. L., & Gunderson, J. G. (2006). Preliminary data on an acceptance-based emotion regulation group intervention for deliberate self-harm among women with borderline personality disorder. *Behavior Therapy*, *37*(1), 25–35. <https://doi.org/10.1016/j.beth.2005.03.002>
- Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation Scale. *Journal of Psychopathology and Behavioral Assessment*, *26*(1), 41–54. <http://doi.org/10.1023/B:JOBA.0000007455.08539.94>
- Jarrett, M. A., Rapport, H. F., Rondon, A. T., & Becker, S. P. (2017). ADHD dimensions and sluggish cognitive tempo symptoms in relation to self-report and laboratory measures of neuropsychological functioning in college students. *Journal of Attention Disorders*, *21*(8), 673–683. <https://doi.org/10.1177/1087054714560821>
- Loevaas, M. E. S., Sund, A. M., Patras, J., Martinsen, K., Hjemdal, O., Neumer, S.-P., Holen, S., & Reinjfjell, T. (2018). Emotion regulation and its relation to symptoms of anxiety and depression in children aged 8–12years: Does parental gender play a differentiating role? *BMC Psychology*, *6*(1), Article 42. <https://doi.org/10.1186/s40359-018-0255-y>
- Lucas-Molina, B., Giménez-Dasí, M., Quintanilla, L., Gorriç-Plumed, A. B., Giménez-García, C., & Sarmento-Henrique, R. (2022). Spanish validation of the Emotion Regulation Checklist (ERC) in preschool and elementary children: Relationship with emotion knowledge. *Social Development*, *31*(3), 513–529. <https://doi.org/10.1111/sode.12585>
- Mayes, S. D., Calhoun, S. L., & Waschbusch, D. A. (2023). Agreement between mother, father, and teacher ratings of cognitive disengagement syndrome (sluggish cognitive tempo) in children with autism and children with ADHD. *Psychological Assessment*, *35*(7), 582–588. <https://doi.org/10.1037/pas0001234>
- Moreno-García, I., Servera, M., Morales-Ortiz, M., Cano-Crespo, A., & Sáez, B. (2022). The external validity of sluggish cognitive tempo versus inattention in behavioral, social interaction, and academic performance measures. *Psicothema*, *34*(3), 471–478. <https://doi.org/10.7334/psicothema2021.583>
- Musser, E. D., Lugo, Y., Ward, A. R., Tenenbaum, R. B., Morris, S., Brijmohan, N., & Martinez, J. (2018). Parent emotion expression and autonomic-linked emotion dysregulation in childhood ADHD. *Journal of Psychopathology and Behavioral Assessment*, *40*(4), 593–605. <https://doi.org/10.1007/s10862-018-9685-3>
- Onchwari, G., & Keengwe, J. (2011). Examining the relationship of children's behavior to emotion regulation ability. *Early Childhood Education Journal*, *39*(4), 279–284. <https://doi.org/10.1007/s10643-011-0466-9>
- Sáez, B., Servera, M., Burns, G. L., & Becker, S. P. (2019). Advancing the multi-informant assessment of sluggish cognitive tempo: Child self-report in relation to parent and teacher ratings of SCT and impairment. *Journal of Abnormal Child Psychology*, *47*(1), 35–46. <https://doi.org/10.1007/s10802-018-0436-4>
- Sanchis-Sanchis, A., Grau, M. D., Moliner, A.-R., & Morales-Murillo, C. P. (2020). Effects of age and gender in emotion regulation of children and adolescents. *Frontiers in Psychology*, *11*, Article 946. <https://doi.org/10.3389/fpsyg.2020.00946>
- Seymour, K. E., Chronis-Tuscano, A., Iwamoto, D. K., Kurdziel, G., & MacPherson, L. (2014). Emotion regulation mediates the association between ADHD and depressive symptoms in a community sample of youth. *Journal of Abnormal Child Psychology*, *42*(4), 611–621. <https://doi.org/10.1007/s10802-013-9799-8>
- Shields, A., & Cicchetti, D. (1997). Emotion regulation among school-age children: The development and validation of a New Criterion Q-Sort scale. *Developmental Psychology*, *33*(6), 906–915.
- Silva, E., Freire, T., & Faria, S. (2018). Concurrent and lagged relations between emotion regulation and affect in adolescents' daily life. *The Spanish Journal of Psychology*, *21*, Article E67. <https://doi.org/10.1017/sjp.2018.61>
- Sonuga-Barke, E. J. S., Becker, S. P., Bölte, S., Castellanos, F. X., Franke, B., Newcorn, J. H., Nigg, J. T., Rohde, L. A., & Simonoff, E. (2022). Annual

- research review: Perspectives on progress in ADHD science – from characterization to cause. *Journal of Child Psychology and Psychiatry*, **64**(4), 506–532. <https://doi.org/10.1111/jcpp.13696>
- The jamovi project.** (2022). *Jamovi* (Version 2.3) [Computer software]. <https://www.jamovi.org>
- Tingley, D., Yamamoto, T., Hirose, K., Keele, L., & Imai, K.** (2014). Mediation: R package for causal mediation analysis. *Journal of Statistical Software*, **59**(5), 1–38. <https://doi.org/10.18637/jss.v059.i05>
- Voltas, N., Hernández-Martínez, C., Aparicio, E., Arijá, V., & Canals, J.** (2014). Psychopathological factors that can influence academic achievement in early adolescence: A three-year prospective study. *The Spanish Journal of Psychology*, **17**, Article E100. <https://doi.org/10.1017/sjp.2014.100>
- Wood, W. L. M., Lewandowski, L. J., Lovett, B. J., & Antshel, K. M.** (2017). Executive dysfunction and functional impairment associated with sluggish cognitive tempo in emerging adulthood. *Journal of Attention Disorders*, **21**(8), 691–700. <https://doi.org/10.1177/1087054714560822>