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**Remote Learning during COVID-19: Examining School Practices, Service Continuation,
and Difficulties for Adolescents with and without ADHD**

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Abstract

Purpose: To examine remote learning practices and difficulties during initial stay-at-home orders during the COVID-19 pandemic in adolescents with and without ADHD.

Methods: Participants were 238 adolescents (132 males; 118 with ADHD) ages 15.64-17.99 years and their parents. Adolescents and parents completed questionnaires in May/June 2020 when in-person schools were closed in the United States.

Results: Twenty-two percent of families incurred financial costs to support remote learning, and only 59% of school-based services received prior to COVID-19 continued during COVID-19 remote learning. Adolescents with ADHD had fewer routines and more remote learning difficulties than adolescents without ADHD. Parents of adolescents with ADHD had less confidence in managing remote learning and more difficulties in supporting home learning and home-school communication. Thirty-one percent of parents of adolescents with ADHD with an Individualized Education Program (IEP) or receiving academic accommodations (504 Plan) reported remote learning to be very challenging, compared to 18% of parents of adolescents with ADHD without an IEP/504 Plan and only 4% of parents of adolescents with neither ADHD nor an IEP/504 Plan. Fewer adolescent routines, higher negative affect, and more difficulty concentrating because of COVID-19 were each associated with greater adolescent remote learning difficulties only in adolescents with ADHD.

Conclusions: This study provides initial findings of the nature and impact of remote learning during the COVID-19 pandemic. It is imperative for schools and communities to provide the necessary supports to adolescents, particularly those with mental health and/or learning difficulties, and to their parents.

Implications and Contributions: The start of the COVID-19 pandemic included the near-universal closing of schools. This study describes the remote learning practices, continuation of

school services, financial burden to families, and remote learning difficulties in adolescents with and without ADHD when initial stay-at-home orders were in place in the United States.

Keywords: adolescence; attention-deficit/hyperactivity disorder; coronavirus; school; parenting

Introduction

One of the greatest disruptions to youths' lives during the COVID-19 pandemic included the near-universal closing of schools. Within a matter of weeks, the nearly 60 million students attending schools in the United States abruptly transitioned to remote learning, impacting students, parents, and teachers alike. Numerous commentaries and position papers have emphasized the importance of examining remote learning practices and impacts during the COVID-19 pandemic, particularly as schools are currently considering options for the upcoming academic year.¹⁻⁴ These authors have emphasized the impact of school closures not only for students' learning, which is itself substantial, but also the impacts on routines to promote structure and well-being, social bonds with peers and teachers, mental health services, and the provision of meals.

In considering remote learning during the COVID-19 pandemic, Reich et al.^{5,p.2} recently observed that "high-achieving learners tend to be minimally affected by online schooling; students who do fine anywhere tend to do fine online. But the online penalty is more severe for vulnerable and struggling students". Indeed, understanding the effects of school closures for youth with special education needs and developmental disorders has been identified as a key research and public health priority.² Remote learning is likely particularly difficult for youth with pre-existing mental health conditions and neurodevelopmental risk, such as attention-deficit/hyperactivity disorder (ADHD).² Adolescents with ADHD frequently experience academic difficulties.^{6,7} In addition they have lower academic motivation⁸ and poorer planning and time-management skills⁹ compared to their peers without ADHD. ADHD is also associated with emotion regulation difficulties,^{10,11} with adolescents with ADHD having greater variability than adolescents without ADHD in positive and negative affect, with this variability being associated with poorer functioning.¹²

In addition, 31-45% of youth with ADHD have a specific learning disorder.¹³ Approximately 52% of adolescents with a history of ADHD have an Individualized Education Program (IEP) or 504 Plan to receive school interventions and accommodations.¹⁴ As expected, adolescents with ADHD receiving services through an IEP or 504 Plan have greater academic and behavioral needs than adolescents with ADHD not receiving these services,¹⁴ suggesting that these adolescents may have particular difficulty with remote learning.

Remote learning also places new burdens on parents and caregivers, who are required to become at-home educators while juggling other home demands and their own work challenges and possible employment loss and financial strain. Adding to this, parents of youth with ADHD often experience their own mental health problems^{15,16} and elevated parenting stress^{17,18}. Parents of adolescents with ADHD may find it especially difficult to provide the structure, organization, communication with teachers and school personnel, and education guidance necessary during remote learning.

Only one study has examined the impact of the COVID-19 pandemic on youth with ADHD. A cross-sectional study in China of 241 children with ADHD ($Mage = 9.43$) found that 54-67% of parents reported that their child's ability to stay focused, anger, and daily routines worsened during the COVID-19 pandemic.¹⁹ However, this study focused on school-aged children, did not include a comparison sample of youth without ADHD, and did not examine remote learning specifically. The current study builds upon this work by examining multiple areas of COVID-19-related remote learning practices and difficulties among adolescents with and without ADHD and their parents.

Specifically, the present study examines remote learning practices, family financial burden, learning difficulties, parent confidence in remote learning, and parent difficulties with learning support and home-school communication in a large sample of adolescents with and without

ADHD. Further, we examined parent confidence managing remote learning, parent difficulties with learning support and home-school communications, adolescent routines during COVID-19, adolescent positive and negative affect, and adolescent difficulty concentrating due to COVID-19 in relation to adolescent remote learning difficulties and whether associations differ for adolescents with and without ADHD.

Methods

Participants and Procedures

Data for the present study were collected from May 16, 2020 - June 15, 2020, when in-person schools were closed and social distancing recommendations were in place in the United States. Participants were 238 adolescents (132 males; ages 15.64-17.99 years) in ninth through eleventh grades during the 2019-2020 academic year (only one participant was in ninth grade due to grade retention) who were initially recruited in eighth grade from local schools across two sites in the Southeastern and Midwestern United States ($n_s = 103$ and 135 at the first and second study site, respectively). Targeted recruitment was used in the larger study to enroll an approximately equal number of participants with and without ADHD. Thus, based on a comprehensive evaluation completed in eighth grade, approximately half ($n=118$) of the sample was diagnosed with DSM-5 ADHD (85 Predominantly Inattentive Presentation; 33 Combined Presentation), with remaining participants ($n=120$) comprising a comparison sample without ADHD. Participants were mostly White (80.3%) and non-Hispanic/Latinx (94.5%). Details of the larger study and diagnostic and study procedures can be found in Supplement 1, available online, and further description of the sample can be found in Table S1.

Measures

A brief overview of measures is provided here, with a more thorough description of the measures provided in Supplement 1, available online.

Home Adjustment to COVID-19 Scale (HACS). The HACS²⁰ is a parent-report measure assessing remote learning practices, costs, service use changes, and learning difficulties.

Composites used in this study include school material support of home learning, financial burden of home learning, and stability of school services. Continuous scales included adolescent remote learning difficulties ($\alpha=.92$), parent confidence managing remote learning ($\alpha=.93$), parent difficulties with learning support and home-school communications ($\alpha=.93$), and total remote learning difficulties ($\alpha=.85$).

Adolescent Routines Questionnaire (ARQ). The ARQ²¹ asks parents and adolescents to rate how often the adolescent engages in various behaviors in a routine manner (i.e., at the same time or in the same way each day). In the present study, $\alpha=.88$ and $.85$ for parent-reported and adolescent-reported routines, respectively.

COVID-19 Adolescent Symptom and Psychological Experience Questionnaire (CASPE). The CASPE²² is an adolescent-report measure assessing experiences and exposures related to COVID-19. In the current study, scales assessing positive affect, negative affect, and difficulties concentrating because of the COVID-19 pandemic were used. In the present study, $\alpha=.79$, $.93$ and $.73$ for positive affect, negative affect, and difficulty concentrating due to COVID-19, respectively.

Statistical Analyses

Descriptive statistics examined the educational impact of the COVID-19 pandemic on adolescents and their parents. We examined rates of daily time spent on remote learning, remote learning methods used, remote learning materials provided by schools, family costs to support remote learning, and whether school services were maintained during remote learning. Our focus for these descriptive statistics was the entire sample of adolescents, and chi-square tests were conducted to examine whether rates differed for adolescents with and without ADHD. Odds ratios

were used as a measure of effect size, with 1.5, 3.5, and 9.0 being considered small, medium, and large effects, respectively.

Independent samples *t*-tests were conducted comparing adolescents with and without ADHD on continuous variables. Cohen's *d* was calculated as a measure of effect size, with 0.2, 0.5, and 0.8 as benchmarks for small, medium, and large effects, respectively. Follow-up analysis of variance (ANOVA) analyses explored whether adolescents with ADHD who also had an IEP or 504 Plan had particularly high difficulties with remote learning or whether their parents had lower rates of confidence or greater difficulties with learning support. ANOVAs controlled for age, sex, race, ethnicity, family income, cohort, site, and pre-COVID-19 academic impairment and parent psychopathology (see Supplemental Materials for details regarding pre-COVID-19 measures and group differences). Effect sizes for mean group differences were calculated using eta-squared (.01=small, .09=medium, .25=large effect). Finally, the PROCESS macro²³ in SPSS® was used to examine predictors of adolescent difficulties with remote learning and whether associations differed between adolescents with or without ADHD. Specifically, we examined parent confidence managing remote learning, parent difficulties with learning support and home-school communications, adolescent routines during COVID-19, adolescent positive and negative affect, and adolescent difficulty concentrating in relation to adolescent difficulties with remote learning. Each model also evaluated whether ADHD status moderated the association between the predictor variable and adolescent remote learning difficulties. All analyses controlled for age, sex, race, ethnicity, family income, cohort, site, IEP/504 status, and pre-COVID-19 adolescent academic impairment and parent psychopathology; to reduce the risk of Type I Error, the focus of the regressions are on ADHD the predictor variables, group status, and the interaction terms and thus covariates will not be interpreted.

Results

Rates of Remote Learning Practices, School Response, and Financial Burden

The majority of adolescents reported engaging in class meetings online (59%) and watching recorded videos (53%). A significant minority reported having online office hours with teachers (41%) and individual online meetings with teachers (31%). Notably, 21% of adolescents reported receiving no remote/online learning instruction during stay-at-home orders. Adolescents from low income families were significantly more likely than adolescents from high income families to receive no remote/online learning ($\chi^2=6.28, p=.012$), and significantly less likely to engage in class meetings online ($\chi^2=8.78, p=.003$; Table S3). No significant differences emerged for remote learning methods between adolescents with and without ADHD ($\chi^2=0.00-2.81, ps>.094$; Table S2). The vast majority (72%) of adolescents were reported by their parents to spend 3 hours or less on schoolwork on an average school day during the COVID-19 pandemic. Of this time, an average of 1.65 hours ($SD=1.56$; range=0-7) was direct instruction with teachers online.

Approximately three-quarters (73%) of families reported receiving materials to support remote learning through their school. However, 22% of families reported taking on a financial burden to support remote learning, with the mean cost during stay-at-home orders (i.e., mid-March to mid-June 2020) being \$198 per family (range = \$5-1,000 per family). In particular, 12% of families reported needing to buy a better internet plan (average cost of \$68/month; range = \$10-150/month). Families with incomes below the U.S. median were more likely than families with incomes above the U.S. median to incur a financial burden ($\chi^2=7.34, p=.007$; Table S3).

Only 59% of school services that were being received prior to COVID were maintained during remote learning. Of the services that were maintained, the most common were extended time to complete work (72%; 47/65 students), meals provided by school (70%; 14/20 students),

and modified assignments or exams (60%; 15/25 students). In contrast, only 35% (6/17 students) continued receiving school counseling and only 39% (17/44 students) continued receiving tutoring during COVID-19 remote learning. See Table S4.

Remote Learning Challenges, Routines, and Affect during the COVID-19 Pandemic in Adolescents with and without ADHD

Significant group differences were present in experiences with remote learning for adolescents and parents (Table 1; see Table S5 for intercorrelations and descriptive statistics of study variables). Adolescents with ADHD experienced significantly more difficulties with remote learning than adolescents without ADHD ($p < .001$, $d = 1.03$). Additionally, parents of adolescents with ADHD had less confidence in managing remote learning ($p = .001$, $d = 0.46$) and more difficulties supporting home learning and home-school communication ($p < .001$, $d = 0.60$). In addition, both parents and adolescents indicated that adolescents with ADHD had fewer routines during the COVID-19 pandemic ($ps < .001$ and $= .002$, $ds = 0.82$ and 0.49 , respectively). In contrast, adolescents with and without ADHD did not differ in their self-ratings of positive affect, negative affect, or difficulties concentrating due to COVID-19 ($ps > .10$, $ds = 0.07-0.19$).

Follow-up analyses explored differences in remote learning difficulties based on IEP/504 status. As shown in Table 2, adolescents with ADHD with and without an IEP/504 Plan experienced significantly more difficulties with remote learning and had parents with less confidence in managing remote learning than adolescents without ADHD. Parents of adolescents with ADHD with an IEP/504 Plan had more difficulties supporting remote learning and home-school communication relative to parents of adolescents with ADHD without an IEP/504 Plan. Strikingly, as shown in Figure 1, 31% of parents of adolescents with ADHD with an IEP/504 Plan reported finding it very challenging to have schooling moved to remote learning, compared to

18% of parents of adolescents with ADHD without an IEP/504 Plan and 4% of parents of adolescents with neither ADHD nor an IEP/504 Plan.

Correlates of Adolescent Difficulties with Remote Learning During COVID-19

Full results of the regression analyses are provided in Table S6. ADHD status significantly moderated the association between parent confidence in managing remote learning and adolescent difficulties with remote learning, $b=-0.33$, $SE=0.11$, $p=.026$. Greater parent confidence was associated with fewer difficulties for both groups, though the relation was stronger for adolescents with ADHD, $b=-0.70$, $SE=0.10$, $p<.001$, than for adolescents without ADHD, $b=-0.37$, $SE=0.11$, $p=.001$ (see Figure 2a). Parent learning support and home-school communication difficulties were significantly associated with adolescent remote learning difficulties ($b=0.30$, $SE=0.06$, $p<.001$), and this association was not moderated by ADHD status ($b=0.13$, $SE=0.09$, $p=.162$).

ADHD status significantly moderated the association between parent-reported and adolescent-reported routines and adolescent remote learning difficulties, $b=-0.13$, $SE=0.06$, $p=.039$ and $b=-0.14$, $SE=0.06$, $p=.021$. More parent-reported routines were associated with fewer difficulties for both groups, though the relation was stronger for adolescents with ADHD, $b=-0.25$, $SE=0.04$, $p<.001$, than for adolescents without ADHD, $b=-0.12$, $SE=0.05$, $p=.011$ (see Figure 2b). More adolescent-reported routines were associated with fewer adolescent difficulties in adolescents with ADHD, $b=-0.20$, $SE=0.04$, $p<.001$, but not in adolescents without ADHD, $b=-0.06$, $SE=0.04$, $p=.158$ (see Figure 2c).

ADHD status significantly moderated the associations between positive and negative affect and adolescent remote learning difficulties, $b=-0.39$, $SE=0.19$, $p=.044$ and $b=0.14$, $p=.033$, respectively. The relation between higher positive affect and fewer remote learning difficulties was significant for adolescents with ADHD, $b=-0.32$, $SE=0.13$, $p=.016$, but not for adolescents without ADHD, $b=0.07$, $SE=0.14$, $p=.617$ (see Figure 3a). Similarly, higher negative affect was

associated with more remote learning difficulties for adolescents with ADHD, $b=0.17$, $SE=0.05$, $p<.001$, but not for adolescents without ADHD, $b=0.03$, $SE=0.03$, $p=.504$ (see Figure 3b).

Finally, ADHD status significantly moderated the association between adolescent difficulty concentrating because of COVID-19 and remote learning difficulties, $b=0.26$, $SE=0.11$, $p=.022$. Difficulties concentrating were associated with more remote learning difficulties for adolescents with ADHD, $b=0.38$, $SE=0.08$, $p<.001$, but not for adolescents without ADHD, $b=0.12$, $SE=0.08$, $p=.156$ (see Figure 3c)¹.

Discussion

This is the first study to document rates of remote learning practices and school services during the COVID-19 pandemic when schools were closed and to examine remote learning's impact on adolescents. This study also provides the first evidence that adolescents with ADHD and their parents have had more difficulties than adolescents without ADHD with remote learning during the pandemic.

The majority of adolescents reported having online class meetings and watching recorded videos during remote learning. However, almost a quarter of adolescents reported no remote/online learning during this time. It is unknown whether these adolescents were not offered remote learning opportunities, or if they were offered opportunities but chose not to participate.

When adolescents participated in remote learning, almost three-quarters of parents indicated that

¹ We acknowledge that the number of analyses may have increased the probability of having a Type 1 Error. There is no simple solution to this dilemma (see Moran, 2003, and Nakagawa, 2004). We therefore did not apply such a correction in the results. However, so that readers could further understand our findings, we conducted a false discovery rate-controlling analysis (Benjamini & Hochberg 1995, 2000). To conduct a false-discovery rate analysis, all observed p-values were ordered sequentially from low (p_1) to high (p_m), where m represents the total number of interpreted p-values in main analyses. We then identified the largest k such that $p_k < 0.05 * k/m$. The adjusted alpha of $0.05*k/m$ was .023. Using this adjusted alpha, all significant group differences presented in Table 2 and the supplemental tables (S1-S4) remain, and four of the interactions presented in S6 become trends. Specifically, the interaction of parent confidence, parent-reported adolescent routines, adolescent positive affect and adolescent negative affect with ADHD became trends. This is not surprising given that moderation analyses are generally already underpowered in nonexperimental research (McClelland & Judd, 1993).

their adolescent spent three or fewer hours total on schoolwork each day. A recent analysis of state education website guidance regarding remote learning during COVID-19 found that among states with sample schedules or guidance on daily plans, most recommended three to four hours of learning activities for secondary students.⁵ Data from our study thus appear to be consistent with state guidance, though it is important to evaluate whether this amount of instruction is sufficient, particularly as school districts plan for the 2020-2021 academic year. On one hand, three to four hours of instruction and learning activities may be insufficient to promote learning of new material and reinforcement of previously-learned material, particularly for students with learning challenges. On the other hand, if secondary school instruction can effectively be done in three to four hours, this raises questions regarding the standard model of instruction and whether more time should be permanently devoted to exercise and creative expression.⁵

Almost three-quarters of families reported receiving materials to support learning from their school, though this means a sizable minority did not. Further, almost a quarter of families reported incurring a cost to support their adolescent's home learning, with the average amount being almost \$200. Adolescents from lower-income families were more likely to engage in no remote/online learning, to experience financial burden, and to experience remote learning difficulties. As such, remote learning is likely to exacerbate existing inequalities in education for youth living in poverty or lower-income households.^{3,4,24} Notably, 12% of families reported a cost to improve the internet in their home. This recurring cost is an important consideration for school districts as they weigh options for learning during and after the pandemic.²⁴ Also of note, 30% of the adolescents in our sample who had meals provided by school prior to the COVID-pandemic did not continue to receive meals during remote learning. Although we do not know whether families were not offered meals or chose not to receive meals that were offered (perhaps due to

having to drive to the school to pick meals up), our study provides initial empirical data to concerns of worsening food insecurity during remote learning.^{2-4,24}

It is also concerning that most adolescents who received school counseling/therapy or tutoring did not continue to receive these services during remote learning. The rapid transition to remote learning in March 2020 likely played a role in the disruption of these services, but it is critical to proactively and creatively provide – and expand – these services as the pandemic continues. Students with mental health and educational issues are among the most vulnerable to the negative impacts of the pandemic, and collaborations, community partnerships, and resources must be used to mitigate such impacts.^{2,4,24,25}

This study also provides evidence that adolescents with ADHD, and their parents, experience more difficulties with remote learning compared to adolescents without ADHD. It is well-established that adolescents with ADHD often have academic difficulties,^{6,7} and our findings suggest that difficulties with in-person learning are likely to extend to remote learning. Of note, our analyses controlled for pre-COVID-19 academic impairment, suggesting that our findings are not simply attributable to pre-existing academic difficulties. In addition, parents of adolescents with ADHD with an IEP or 504 Plan were especially likely to have difficulty providing learning support during remote learning, with almost a third of these adolescents' parents indicating that home-based learning was very challenging (compared to 18% of parents of adolescents with ADHD without an IEP/504 Plan and only 4% of parents of adolescents with neither ADHD nor an IEP/504 Plan). Moving forward, it is imperative for schools and communities to not only provide the necessary supports to adolescents themselves, particularly those with mental health and/or learning difficulties, but also to parents as they navigate the unknown territory of remote learning. Findings from our study point to the importance of building parent confidence in managing remote learning, promoting adolescent routines, and reducing negative affect as ways for mitigating

difficulties with remote learning for adolescents, particularly those with ADHD. This is an important area for research and clinical attention, as numerous school-based interventions have been developed for youth with ADHD^{6,7} but none have been modified for, or tested in the context of, remote learning.

There are several notable limitations to acknowledge. First, this study was cross-sectional and no assumptions can be made about directionality of associations. For example, greater parent confidence may reduce adolescents' difficulties with remote learning, but it is also possible that adolescent difficulties impact parental confidence around remote learning. Second, due to the time-sensitive nature of this study and the stress placed on many teachers during the transition to remote learning, no teacher ratings were collected. Gaining additional perspectives by teachers and school administrators could provide useful information about how to allocate services to help both educators and families. Additionally, participants in this study had relatively low utilization rates of certain school services, and the findings related to service use and stability should be interpreted cautiously. We also did not have robust measurement of medication use to include in this study. Fourth, it will be important for future studies to further establish the reliability and validity of the COVID-19-specific measures used in this study. Finally, the results of this study do not provide information about the actual uptake of knowledge or how much learning occurred via remote education. This study also could not evaluate school-level characteristics or resources that may impact approaches to remote learning, including both learning approaches and school services provided. Despite these limitations, this study makes a major contribution to understanding the nature and impacts of remote learning during the COVID-19 pandemic for adolescents with and without ADHD and their families.

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REMOTE LEARNING DURING COVID-19

Table 1

Differences in COVID-19 Remote Learning, Routines, Affect, and Difficulty Concentrating in Adolescents with and without ADHD

Variable	Total Sample	ADHD Sample	Comparison Sample	<i>t</i> (95% CI)	<i>p</i>	<i>d</i>
Adolescent Difficulties with Remote Learning	16.06 (6.33)	19.01 (6.49)	13.19 (4.65)	7.88 (4.36, 7.27)	<.001	1.03
Parent Confidence Managing Remote Learning	16.14 (4.78)	15.06 (4.89)	17.19 (4.43)	-3.50 (-3.33, -0.93)	.001	0.46
Parent Learning Support and Home-School Communication Difficulties	20.97 (7.83)	23.25 (7.53)	18.74 (7.50)	4.60 (2.58, 6.44)	<.001	0.60
Remote Learning Total Difficulties	59.85(16.23)	66.50 (16.11)	53.37 (13.56)	6.77 (6.05, 11.60)	<.001	0.88
Parent-Reported Adolescent Routines	52.96 (12.44)	48.16 (12.82)	57.64 (10.11)	-6.22 (-12.24, -6.34)	<.001	0.82
Adolescent-Reported Adolescent Routines	35.25 (9.19)	33.10 (9.18)	37.35 (8.75)	-3.19 (-8.19, -1.94)	.002	0.49
Adolescent Positive Affect	2.64 (0.82)	2.57 (0.87)	2.71 (0.75)	-1.30 (-0.35, 0.07)	.195	0.17
Adolescent Negative Affect	2.28 (0.82)	2.25 (0.83)	2.31 (0.82)	-0.57 (-0.28, 0.15)	.571	0.07
Adolescent Difficulty Concentrating due to COVID-19	2.91 (0.59)	2.97 (0.61)	2.86 (0.57)	1.45 (-0.04, 0.27)	.148	0.19

Note. ADHD = attention-deficit/hyperactivity disorder.

REMOTE LEARNING DURING COVID-19

Table 2

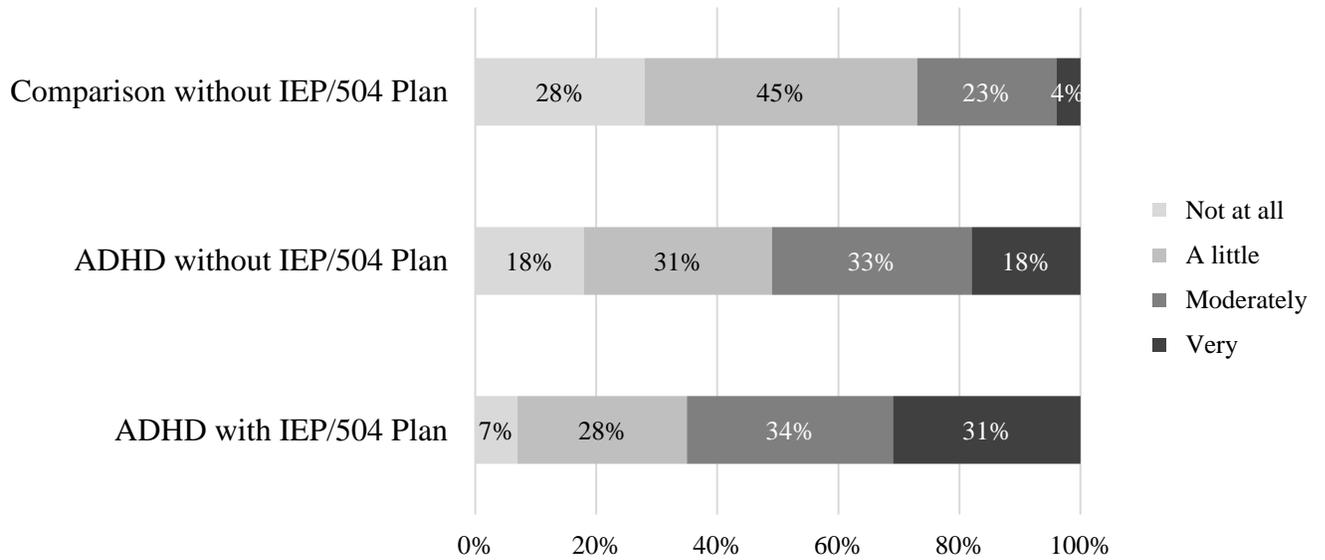
Group Differences in Adolescent and Parent Remote Learning Difficulties Based on IEP/504 Plan Status

	ADHD + IEP/504 Plan (N = 61)	ADHD - IEP/504 Plan (N = 55)	Comparison - IEP/504 Plan (N = 109)	<i>F</i>	<i>p</i>	η -squared
Adolescent Difficulties with Remote Learning	19.55 (6.01) ^a	18.33 (6.99) ^a	13.09 (4.60) ^b	17.04	<.001	.143
Parent Confidence Managing Remote Learning	15.20 (4.56) ^a	14.96 (5.27) ^a	17.05 (4.41) ^b	0.82	.443	.008
Parent Learning Support and Home-School Communication Difficulties	24.45 (7.57) ^a	21.56 (6.74) ^b	18.49 (7.15) ^c	6.18	.002	.057
Remote Learning Total Difficulties	68.80 (10.60) ^a	63.82 (10.83) ^b	57.21(9.92) ^c	15.88	<.001	.134

Note. Row means with different superscripts are significantly different from each other. All ANOVAs include age, sex, race, ethnicity, family income, cohort, site, and pre-COVID academic impairment and parent psychopathology/stress as covariates. ADHD = attention-deficit/hyperactivity disorder. IEP = Individualized Education Program. Eta-squared can be interpreted such that .01, .09, and .25 equal small, medium, and large effects, respectively).

Figure 1

Challenges with Home-Based Learning Based on ADHD and IEP/504 Plan Status



Note. ADHD= attention-deficit/hyperactivity disorder, IEP = Individualized Education Program.

Figure 2

ADHD Moderates the Associations between Parent Confidence and Adolescent Routines with Adolescent Remote Learning Difficulties

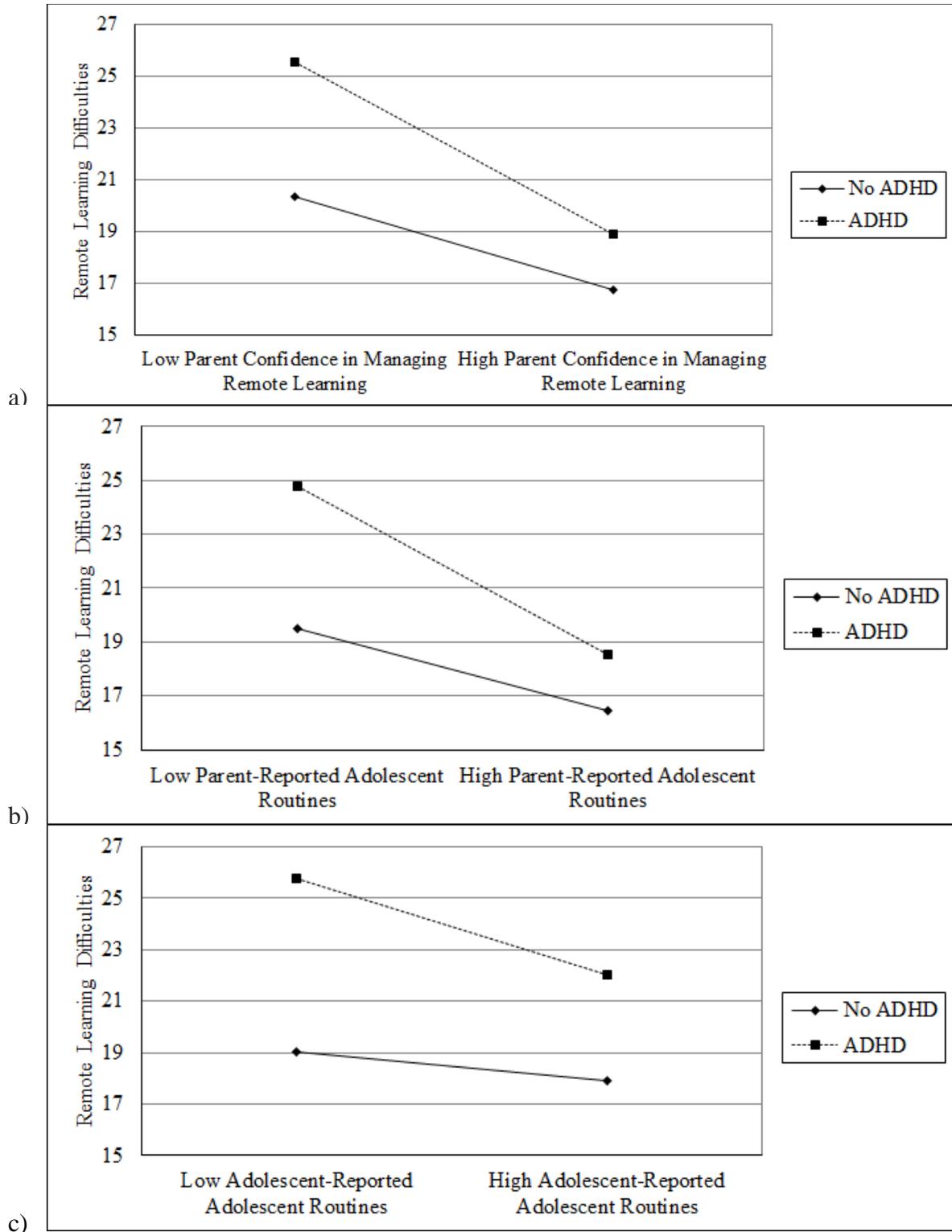


Figure 3

ADHD Moderates the Associations between Adolescent Positive Affect, Negative Affect, and Concentration Difficulties with Adolescent Remote Learning Difficulties

