Supplementary Online Content

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eResults

This supplementary material has been provided by the authors to give readers additional information about their work.

eResults

Psychometric properties of digital media use and ADHD symptom measures. Both digital media use and ADHD symptoms could be measuring common underlying tendencies, in which case it is possible for digital media use to be associated with ADHD symptoms across time because it is more reliably measured than ADHD symptoms. To address this possibility, estimates of internal consistency, stability, and cross-measure correlations of the two measures were calculated across time among students at all levels of baseline ADHD symptom with data available at ≥1 follow-ups (N=2,777). The results of these analyses demonstrated that both measures yielded adequate reliability estimates in this sample and did not show marked discrepancies in internal consistency or stability estimates between the digital media and ADHD measures (see eTable 7), suggesting that differences in reliability between the two measures did not likely account for the finding that digital media use was associated with subsequent ADHD symptoms in this study.

Two additional analyses were conducted to provide preliminary estimates of the validity of the digital media measure used in this study. The convergent validity of the modern digital media measure was examined in a correlational analysis with Compulsive Internet Use Scale,[1] which is measure of Internet addiction symptoms—a construct that is related to (but distinct from) digital media use, per se. Results showed moderate-sized correlation between the modern digital media use frequency index and the Compulsive Internet Use Scale score at baseline (r=.38, p<.001), providing initial support of the convergent validity of the digital media use measure. To test preliminary factorial validity, a confirmatory factor analysis was performed using structural equation modeling estimating a single factor model with unrestrained loadings from all 14 binary-scored items (high-frequency use = 1 vs. all other responses = 0). This model demonstrated a good fit to the data, $\chi^2(42)=256.21$, p<.01, Comparative Fit Index=.99, Root Mean Square Error of Approximation=.04, and Standardized Root Mean Square Residual=.01. All 14 items loaded on a single factor with well-balanced factor loadings ranging from .41 to .64, providing preliminary support for the single-factor structure of the measure and the scoring algorithm for the composite index used in the study, which applied an unweighted sum to binary response classifications among the 14 items.

Alternative modeling methods considering clustering effects in the data. In the main analyses presented in Table 2, two-level (hierarchical) random effects models were tested, in which time (6 vs. 12 vs. 18 vs. 24-month follow-up) was nested within student, with school clustering accounted for as an additional random effect. It is possible that alternative methods of addressing data non-independence may affect the results. Therefore, a sensitivity analysis using a two-level complex design to adjust parameter standard errors for non-independence in the data due clustering by school was conducted. In this analysis, time was nested within student via two-level hierarchical modeling, and the effect of student clustering within schools was adjusted by the complex design option in Mplus Version 7. In this model, the composite digital media use index (range:0-14) was significantly associated with increased odds of ADHD symptom status in those without ADHD symptoms at baseline (OR[95%CI]=1.10[1.04, 1.15]) and with ADHD quantitative severity level (range: 0-54) amongst students at all levels of baseline ADHD symptoms (b[95% CI]=0.10[0.01, 0.19]) at follow-ups, after adjusting for covariates presented in Table 2. Thus, the method of addressing clustering within the dataset did not appear to influence primary results.

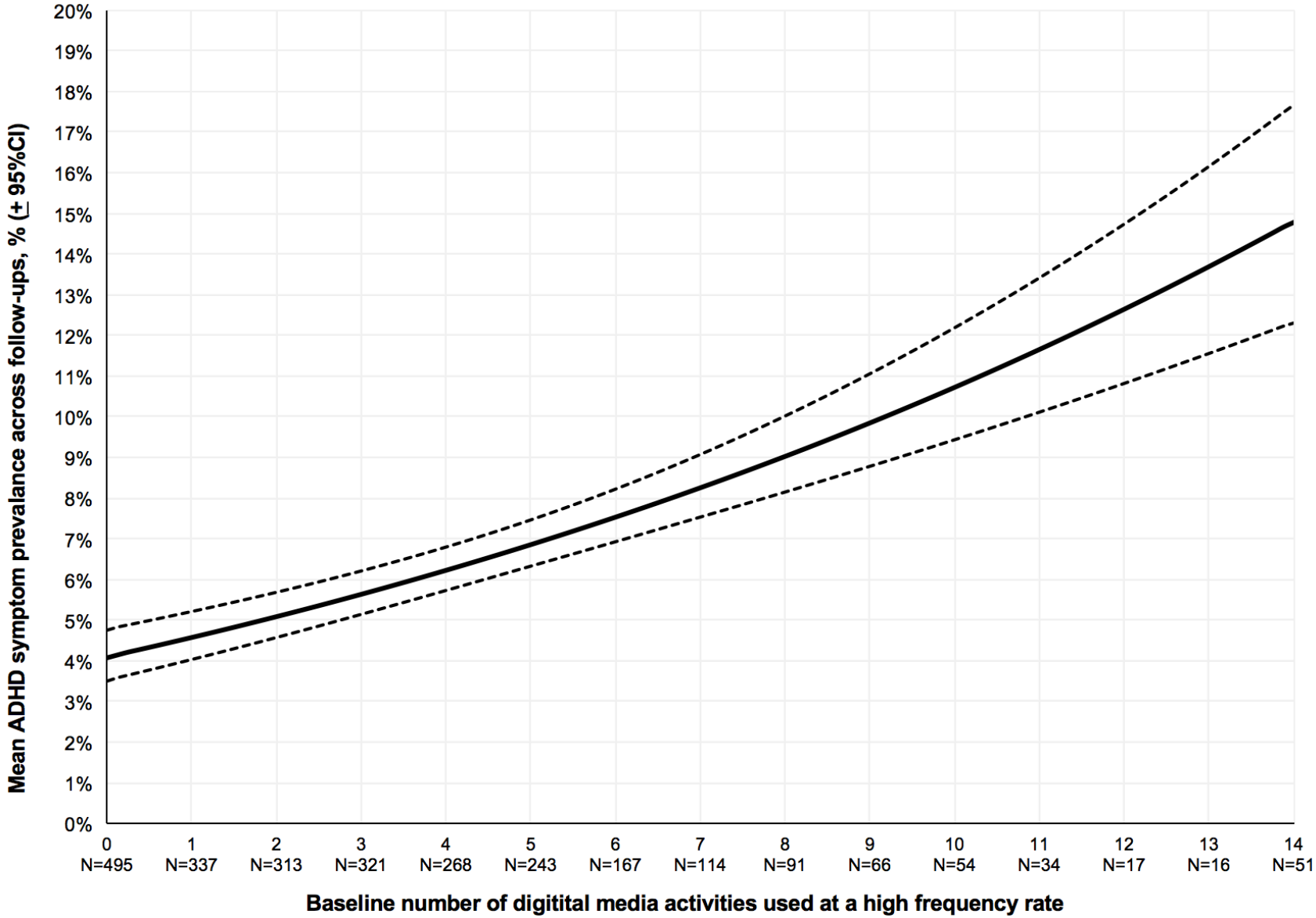
Alternative methods of handling missing data. To determine the effect of differing strategies of addressing missing data on covariates, the adjusted logistic regression model was re-tested using listwise deletion due to missing data for any regressor, covariate, or outcome (N=2,115) and using multiple imputation with the weighted least squares method estimator (estimator=WLSMV in Mplus) with 5 imputed datasets. Results from the adjusted models showed that the OR estimate for the association of the digital media composite index with ADHD positive symptom status at follow-up using listwise deletion (OR[95% CI]=1.11[1.06, 1.16]) and multiple imputation (OR[95% CI]=1.10[1.05, 1.16) approaches were comparable to the adjusted OR in the primary analysis using Full Information Maximum Likelihood for addressing missing data (OR[95% CI]=1.10[1.05, 1.15]). Thus, it is unlikely that the missing data procedure influenced the findings.

Alternative method of operationalizing frequency of digital media use. It is possible that using binary classifications of high-frequency use (yes/no) to generate the cumulative digital media frequency index may have not optimally modeled variation in digital media use frequency that may relate to ADHD symptoms. To address this, associations between a digital media use frequency index that summed each item's 4-level response category (0 – 3) and ADHD symptom status among baseline ADHD-symptom negative students were tested. The mean and variance with this scoring (M=19.77, SD=9.00, Range=0-42) was higher than the original binary-item scoring and, after rescaling (M=0, SD=1), yielded an association estimate that was approximately proportional to the original scoring, indicating that one standard deviation increase in digital media use was significantly associated with increased odds of ADHD symptom occurrence over a 24-month period (OR[95%CI]=1.28[1.08, 1.52], p=.004).

Effect of subclinical levels of ADHD symptoms. Some students that did not meet symptom criteria for the *DSM-IV* ADHD symptom threshold and were included in the primary analytic sample may have had subclinical levels of symptoms that could have affected the findings. To address the effect of subclinical ADHD levels, the models were re-tested after additionally adjusting for the ADHD baseline symptom severity score, which is the sum of frequency responses (*Never or Rare=0, Sometimes=1, Often=2, Very Often=3*) across the 18 symptoms, in the primary analytic sample who scored below the symptom cut-point at baseline. The association of the digital media frequency index (range: 0-14) with ADHD status at follow-ups was significant in the model adjusting for only the baseline ADHD symptom score (OR[95%CI]=1.09[1.04, 1.14]) and a fully-adjusted model that included baseline ADHD symptom score as well as the study covariates (OR[95%CI]=1.08[1.04, 1.13]). Thus, baseline subclinical ADHD symptom levels did not appear to confound the associations.

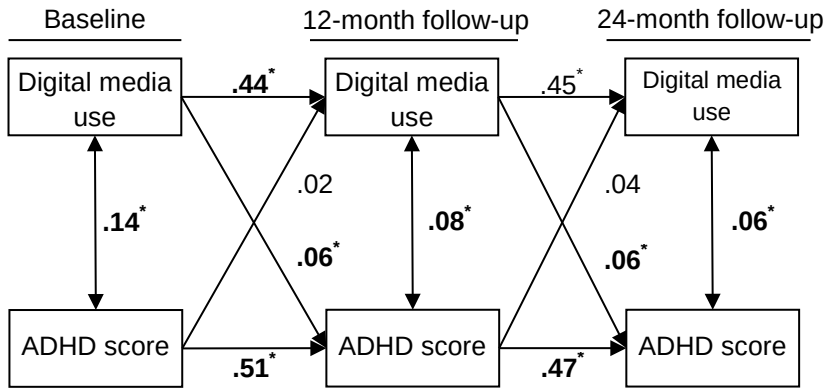
Bi-directional associations between digital media use and ADHD symptoms across time. To further address the directionality of the association between digital media use and ADHD symptoms, cross-lagged models were tested, which simultaneously modeled the association of digital media symptoms with subsequent changes in ADHD symptoms and the association of ADHD symptoms with subsequent changes in digital media use. Using the sample of youth who scored both above and below symptom cut-point thresholds for ADHD at baseline (N=2,777), the model included cross-lagged paths from baseline to the 12-month follow-up and from the 12-month follow-up to the 24-month follow-up for both measures. Reported in eFigure 2, the results demonstrate that directional associations from the modern digital media use composite index to subsequent changes in ADHD symptom severity were statistically significant for both time-lagged intervals (i.e., baseline to 12-month follow-up and 12-month follow-up to 24-month follow-up). By contrast, the directional associations from ADHD symptom severity to subsequent changes in modern digital media use composite index score were not significant for either time-lagged interval. Thus, the data indicate more consistent directional associations from digital media use to ADHD symptoms than from ADHD symptoms to digital media use.

eFigure 1. Estimated mean prevalence of ADHD symptoms across follow-ups, by baseline modern digital media use frequency index derived from the primary unadjusted repeated measures logistic regression model amongst baseline ADHD-symptom-negative students



Note. Mean percentage (±95% Confidence Interval) of students positive for past 6-month ADHD symptoms across 6-, 12-, 18-, and 24-month follow-ups as a function of the baseline modern digital media use cumulative index estimated from the primary unadjusted repeated measures logistic regression model in Table 2. Percentage depicted as solid line. Upper and lower confidence intervals depicted as broken lines. The frequency (N, %) of students within each level of baseline modern digital media use is reported along the horizontal axis. Sample (N=2,587) includes participants who did not surpass the ADHD self-report symptom scale threshold for past 6-month ADHD symptoms (i.e., students reporting experiencing ≤5 inattentive and ≤5 hyperactive impulsive ADHD symptoms 'often' or 'very often') at baseline). Previous evidence of sensitivity and specificity of the ADHD symptom measure can be found in the Methods.

eFigure 2. Cross-lagged model of associations between modern digital media use frequency index and ADHD symptom severity among students at all levels of baseline ADHD symptoms



Note. Includes students at all baseline levels of ADHD symptoms (N=2,777) and applies digital media use frequency index (range: 0-14) and ADHD symptom severity (range: 0-54). χ^2 =18.56, df = 5, *p* = .002, Comparative Fit Index = .98, Root Mean Square Error of Approximation = .04, and Standardized Root Mean Square Residual = .01. Standardized coefficients adjusted for age, race/ethnicity, gender, and free-lunch eligibility. *p<.05 for path estimate

eTable 1. Sociodemographic Characteristics of participating schools in reference to Los Angeles county schools

	School											Los Angeles County*
	1	2	3	4	5	6	7	8	9	10[a]		
Total School Enrollment, *N*	1,502	2,664	2,176	1,990	2,403	1,734	2,267	2,153	1,026	250		505,582
Total Study Enrollment, *N*	313	471	413	435	461	246	459	394	154	50		
Gender, *N* (%)												
Female	735	1,287	1,058	950	1,161	839	1,094	1,079	530	-		246,904
	(48.9%)	(48.3%)	(48.6%)	(47.7%)	(48.3%)	(48.4%)	(48.3%)	(50.1%)	(51.7%)			(48.8%)
Male	767	1,377	1,118	1,040	1,242	895	1,173	1,074	496	-		258,678
	(51.1%)	(51.7%)	(51.4%)	(52.3%)	(51.7%)	(51.6%)	(51.7%)	(49.9%)	(48.3%)			(51.2%)
Ethnicity, *N* (%)												
American Indian/Alaska Native	4	2	8	3	4	1	3	5	2	-		1,925
	(0.3%)	(0.1%)	(0.4%)	(0.2%)	(0.2%)	(0.1%)	(0.1%)	(0.2%)	(0.2%)			(0.4%)
Asian/Pacific Islander**	198	307	1,412	556	200	72	213	105	842	-		56,916
	(13.2%)	(11.5%)	(64.9%)	(27.9%)	(8.3%)	(4.2%)	(9.4%)	(4.9%)	(82.1%)			(11.3%)
Black/African American	166	59	141	324	38	34	53	88	23	-		44,045
	(11.1%)	(2.2%)	(6.5%)	(16.3%)	(1.6%)	(2.0%)	(2.3%)	(4.1%)	(2.2%)			(8.7%)
Hispanic/Latino	1,057	1,253	386	904	838	1,548	1,390	1,837	94	-		320,164
	(70.4%)	(47.0%)	(17.7%)	(45.4%)	(34.9%)	(89.3%)	(61.3%)	(85.3%)	(9.2%)			(63.3%)
White	65	962	169	164	1,225	59	535	103	49	-		73,256
	(4.3%)	(36.1%)	(7.8%)	(8.2%)	(51.0%)	(3.4%)	(23.6%)	(4.8%)	(4.8%)			(14.5%)
Multiethnic/Multiracial	12	81	60	39	98	20	73	15	16	-		9,276
	(0.8%)	(3.0%)	(2.8%)	(2.0%)	(4.1%)	(1.2%)	(3.2%)	(0.7%)	(1.6%)			(1.8%)
Eligible for Free lunch, *N* (%)	1,028	640	380	855	332	1,334	881	1,536	124	-		260,894
	(68.4%)	(24.0%)	(17.5%)	(43.0%)	(13.8%)	(76.9%)	(38.9%)	(71.3%)	(12.1%)			(51.6%)

Note. Data from U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "Local Education Agency (School District) Universe Survey", 2012-13 v.1a; "Public Elementary/Secondary School Universe Survey", 2012-13 v.1a. [a]CCD Data unavailable for school number 10. **Combined Asian/Native Hawaiian/Pacific Islander category.

eTable 2. Number of students with ADHD symptom data available at each follow-up in primary analytic sample of baseline ADHD symptom-negative students

Follow-up ADHD symptom data availability pattern	N
Data available for all 4 follow-up assessments	2,009
Data available for 3 follow-up assessments	327
Completed 6- 12- and 18- month follow-ups only	87
Completed 6- 12- and 24- month follow-ups only	111
Completed 6- 18- and 24- month follow-ups only	74
Completed 12- 18- and 24- month follow-ups only	55
Data available for 2 follow-up assessments	127
Completed 6- and 12- month follow-ups only	71
Completed 6- and 18- month follow-ups only	11
Completed 6- and 24-month follow-ups only	23
Completed 12- and 18-month follow-ups only	3
Completed 12- and 24-month follow-ups only	10
Completed 18- and 24-month follow-ups only	9
Data available for 1 follow-up assessment	124
Completed 6-month follow-up only	91
Completed 12-month follow-up only	19
Completed 18-month follow-up only	3
Completed 24-month follow-up only	11

Note. Primary analytic sample with ADHD data ≥1 follow-up (N=2,587) who did not surpass the ADHD self-report symptom scale threshold for past 6-month ADHD symptoms (i.e., students reporting experiencing ≤5 inattentive and ≤5 hyperactive impulsive ADHD symptoms 'often' or 'very often') at baseline). Previous evidence of sensitivity and specificity of the ADHD symptom measure can be found in the Methods.

eTable 3. Sociodemographics of students included in (vs. excluded from) the primary analytic sample and estimated sociodemographics of students eligible to enroll in the cohort

			Students enrolled in Cohort in 9th Grade (N=3,396)						
			Excluded from analytic sample					Primary analytic sample of baseline negative ADHD symptom status with follow-up data (N=2,587)[e]	Test of overall group differences P-value
	Estimated students eligible to enroll in cohort (N=4,100)		Not surveyed at 10th grade baseline survey (N=345)[a]	Administered abbreviated baseline survey (N=208)[b]	Baseline positive ADHD symptom status (N=198)[c]	Baseline negative ADHD symptom status with no follow-up data (N=58)[d]			
Female, N(%)	1,997 (48.7%)		167 (48.7%)[1,2]	88 (42.3%)[2]	121 (61.1%)[1]	31 (53.4%)[1,2]		1,406 (54.3%)[1]	.001[g]
Age, *M*(*SD*)	15.51 (0.52)		15.60 (1.20)[1]	15.54 (0.46)[1,2]	15.47 (0.36)[2]	15.67 (0.45)[1]		15.51 (0.50)[2]	.02[h]
Race/Ethnicity, N(%)									
Hispanic	2,113 (51.5%)		150 (45.3%)[1]	91 (45.5%)[1]	87 (44.6%)[1]	28 (49.1%)[1]		1,201 (47.5%)[1]	.002[g]
Asian	885 (21.6%)		32 (9.7%)[2]	24 (12.0%)[1,2]	33 (16.9%)[1,2]	7 (12.3%)[1,2]		439 (17.4%)[1]	
Black/African American	227 (5.5%)		30 (9.1%)[1]	17 (8.5%)[1]	10 (5.1%)[1,2]	4 (7.0%)[1,2]		105 (4.2%)[2]	
White	771 (18.8%)		60 (18.1%)[1]	34 (17.0%)[1]	31 (15.9%)[1]	10 (17.5%)[1]		385 (15.2%)[1]	
Other[f]	104 (2.6%)		59 (17.8%)[1]	34 (17.0%)[1]	34 (17.4%)[1]	8 (14.0%)[1]		398 (15.7%)[1]	
Eligible for subsidized lunch, N(%)	1,614 (39.4%)		45 (60.0%)[1]	84 (45.9%)[1]	87 (49.4%)[1]	23 (47.9%)[1]		1,130 (48.2%)[1]	.33[g]

Note. [a]Available data (*N*s = 75 – 343). [b]Available data (*N*s = 183 – 208). [c]Available data (*N*s = 176 – 198). [d]Available data (*N*s = 48 – 58). [e]Available data (*N*s = 2,343 – 2,587). [f]Other race/ethnicity includes students who selected 'Native Hawaiian or Pacific Islander,' 'Multiethnic/Multiracial,' or 'Other' options for the forced-choice race/ethnicity question. [g]Calculated using the χ^2 test. [h]Calculated using one-way Analysis of Variance (ANOVA). Groups not sharing superscript numerals are significantly different in Bonferroni-corrected post-hoc pairwise contrasts for χ^2 tests and ANOVA Least Significant Difference. Abbreviations: N = Sample size; *M* = Mean; *SD* = Standard Deviation.

eTable 4. Estimates of internal consistency, stability, and associations of cumulative digital media use index and ADHD symptom status across time points among baseline ADHD symptom-negative students[a]

		Association estimates by variable number[j,k]						
Variable	**M(SD) or N(%)**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1. Cumulative Digital Media Index[b] - Baseline, M(SD)	3.6 (3.3)	(.86)[e]						
2. Cumulative Digital Media Index[b] - 12-month follow-up, M(SD)	3.9 (3.3)	**.47**[f]	(.84)[e]					
3. Cumulative Digital Media Index[b] - 24-month follow-up, M(SD)	4.4 (3.3)	**.36**[f]	**.44**[f]	(.84)[e]				
4. ADHD symptom-positive status[c] - 6-month follow-up, N(%)	172 (6.9)[d]	.08[g]	.07[g]	.06[g]	–[i]			
5. ADHD symptom-positive status[c] - 12-month follow-up, N(%)	113 (4.8)[d]	.07[g]	.09[g]	.07[g]	**.26**[h]	–[i]		
6. ADHD symptom-positive status[c] - 18-month follow-up, N(%)	129 (5.7)[d]	.05[g]	.07[g]	.12[g]	**.17**[h]	**.31**[h]	–[i]	
7. ADHD symptom-positive status[c] - 24-month follow-up, N(%)	135 (5.9)[d]	.05[g]	.07[g]	.05[g]	**.27**[h]	**.30**[h]	**.30**[h]	–[i]

Note. Abbreviations: ADHD, Attention Deficit/Hyperactivity Disorder. [a]Sample (N=2,587) includes participants who did not surpass the ADHD self-report symptom scale threshold for past 6-month ADHD symptoms (i.e., students reporting experiencing ≤5 inattentive and ≤5 hyperactive impulsive ADHD symptoms 'often' or 'very often') at baseline. Previous evidence of sensitivity and specificity of the ADHD symptom measure can be found in the Methods. [b]Score range: 0-14, higher scores indicate greater digital media use. Total number of 14 different digital media activities engaged in at a high frequency rate ('many times per day') over the preceding week. [c]Students who reported experiencing ≥6 inattentive or ≥6 hyperactive/impulsive ADHD symptoms 'often' or 'very often' in the preceding 6 months on the current self-report symptom ADHD scale (Coding for association estimates: symptom-positive=1, symptom negative=0). 2,201 students were not ADHD symptom-positive at any follow-up; others were ADHD symptom-positive at 1 only (N=271), 2 only (N=79), 3 only (N=24), or all 4 (N=12) follow-ups. [d]Available data for denominators for percent values range 2,241 to 2,477 across follow-ups. [e]Estimates along the diagonal in parentheses represent Cronbach's α internal consistency values. [f]Pearsons *r* coefficient for correlation between two continuous variables. [g]Point-biserial *r* coefficient for correlation between a continuous variable and a binary variable. [h]Phi coefficient for correlation between two binary variables. [i]not applicable. [j]Bold values represent stability coefficients. [k]All estimates statistically significant after Benjamini-Hochberg corrections for multiple testing to control false discovery rate at .05 (based on two-tailed corrected P-value).

eTable 5. ADHD symptom prevalence across follow-ups, by baseline cumulative digital media use index score among baseline ADHD symptom-negative students[a]

Number of digital media activities used at high frequency rate at baseline[b]	Prevalence of ADHD symptoms at each follow-up[c]				Mean ADHD symptom prevalence across follow-ups[e]	
	6-Month	12-Month	18-Month	24-Month	Prevalence	Difference in Prevalence[f]
	N (%)[d]	N (%)[d]	N (%)[d]	N (%)[d]	% (95% CI)	% (95% CI)
0 Activities (N=495)	23 (4.9)	21 (4.8)	18 (4.3)	18 (4.3)	4.6 (3.6, 5.6)	*Reference*
1 Activity (N=337)	17 (5.2)	9 (2.9)	16 (5.3)	18 (5.9)	4.8 (3.7, 6.0)	0.2 (-1.3, 1.7)
2 Activities (N=313)	21 (6.9)	13 (4.4)	15 (5.3)	13 (4.5)	5.3 (4.0, 6.6)	0.7 (-0.8, 2.2)
3 Activities (N=321)	11 (3.6)	7 (2.3)	14 (4.9)	19 (6.5)	4.3 (3.1, 5.4)	-0.3 (-1.8, 1.2)
4 Activities (N=268)	15 (5.7)	12 (5.0)	16 (6.7)	14 (5.7)	5.8 (4.3, 7.2)	1.2 (-0.4, 2.9)
5 Activities (N=243)	19 (8.1)	11 (5.0)	7 (3.4)	11 (5.0)	5.4 (4.0, 7.0)	0.8 (-0.9, 2.5)
6 Activities (N=167)	23 (14.2)	6 (3.8)	9 (6.2)	10 (6.7)	7.8 (5.7, 10.0)	3.2 (1.1, 5.3)
7 Activities (N=114)	9 (8.0)	12 (11.9)	8 (8.5)	10 (9.7)	9.5 (6.7, 12.4)	4.9 (2.5, 7.3)
8 Activities (N=91)	13 (15.5)	5 (6.3)	9 (11.7)	7 (9.0)	10.7 (7.3, 14.1)	6.1 (3.4, 8.8)
9 Activities (N=66)	4 (6.8)	3 (4.9)	5 (8.6)	6 (10.9)	7.7 (4.3, 11.2)	3.1 (0.1, 6.1)
10 Activities (N=54)	4 (7.7)	1 (2.0)	2 (4.4)	1 (2.1)	4.1 (1.3, 7.0)	-0.5 (-3.6, 2.6)
11 Activities (N=34)	3 (9.1)	6 (18.8)	3 (10.3)	3 (10.0)	12.1 (6.3, 17.9)	7.5 (3.5, 11.5)
12 Activities (N=17)	4 (26.7)	1 (7.7)	2 (15.4)	2 (13.3)	16.1 (6.2, 26.0)	11.5 (5.8, 17.2)
13 Activities (N=16)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0.0 (0.0, 0.0)	-4.6 (-10.2, 1.0)
14 Activities (N=51)	6 (12.2)	6 (12.5)	5 (10.2)	3 (6.7)	10.5 (6.1, 14.9)	5.9 (2.6, 9.2)

Note. Abbreviations: ADHD, Attention Deficit/Hyperactivity Disorder. [a]Sample (N=2,587) includes participants who did not surpass the ADHD self-report symptom scale threshold for past 6-month ADHD symptoms (i.e., students reporting experiencing ≤5 inattentive and ≤5 hyperactive impulsive ADHD symptoms 'often' or 'very often') at baseline. Previous evidence of sensitivity and specificity of the ADHD symptom measure can be found in the Methods. [b]Score range: 0-14, higher scores indicate greater digital media use. Total number of 14 different digital media activities engaged in at a high frequency rate ('many times per day') over the preceding week. [c]Students who reported experiencing ≥6 inattentive or ≥6 hyperactive/impulsive ADHD symptoms 'often' or 'very often' in the preceding 6 months on the current self-report symptom ADHD scale (Coding for association estimates: symptom-positive=1, symptom negative=0). [d]Denominators for percentages do not equal Ns in left-hand column due to missing data at respective outcome time point; Ns range: 13 to 465. [e]Mean prevalence (%) across the four follow-up time points weighted by the number of available observations at each time point. [f]Difference in mean prevalence across follow-up (%) in respective group relative to mean prevalence (%) in group reporting 0 baseline high-frequency media activities.

eTable 6. Regression weights from repeated measures linear regression models testing association with ADHD symptom severity at follow-ups among students at all baseline ADHD symptom levels

	Past 6-month ADHD symptom severity[a] at follow-ups		
Baseline Regressors	b (95%CI)[b]		*P*-Value[a]
Unadjusted Model[c]			
Baseline ADHD symptom level[a]	0.53 (0.50, 0.57)		<.001
Number of digital media activities used at a high frequency rate[d]	0.11 (0.02, 0.20)		.01
Time (6- 12- 18- and 24-month follow-ups)[e]	0.01 (-0.09, 0.13)		.51
Number of digital media activities used at a high frequency rate × Time[f]	-0.01 (-0.11, 0.05)		.20
Adjusted Model[g]			
Baseline ADHD symptom level[a]	0.47 (0.43, 0.51)		<.001
Number of digital media activities used at a high frequency rate[d]	0.10 (0.01, 0.19)		.03
Time (6- 12- 18- and 24-month follow-ups)[e]	0.01 (-0.09, 0.13)		.50
Number of digital media activities used at a high frequency rate × Time[f]	-0.01 (-0.11, 0.05)		.21
Female (vs. male) gender	-1.15 (-1.67, -0.63)		<.001
Age[h]	0.09 (-0.36, 0.55)		.68
Race/ethnicity			
Hispanic	*Ref*		
Asian	-0.12 (-1.51, 1.26)		.86
Black/African American	0.36 (-0.49, 1.21)		.41
White	0.27 (-1.20, 1.73)		.73
Other[i]	0.50 (-0.27, 1.27)		.20
Subsidized lunch eligibility status			
No free lunch	*Ref*		
Free or reduced lunch	-0.64 (-1.27, 0.01)		.05
Substance use			
Never	*Ref*		
Past	0.04 (-0.69, 0.76)		.48
Current	0.35 (-0.10, 0.91)		.21
Family history of substance use (any vs. none)	0.47 (-0.08, 1.01)		.10
Delinquent behavior[h]	0.10 (0.08, 0.13)		<.001
CESD scale for depressive symptoms[h]	0.13 (0.11, 0.15)		<.001

Note. N=2,777. Analytic sample of students scoring both above and below ADHD symptom level cut-point at baseline. Abbreviations: CESD, Center for Epidemiologic Studies Depression Scale; OR, odds ratio; CI, Confidence Interval. [a]Score range: 0 to 54, higher scores indicate more severe ADHD symptoms. Each symptom rated 0 (Never or Rare) to 3 (Very Often) × 18 symptoms. [b]Unstandardized regression weights (bs) of association of respective regressor with ADHD symptom level (Range = 0 – 54) across follow-ups in repeated measures linear logistic regression models, including school random effects. [c]Unadjusted model included the time-invariant baseline digital media use variable, time-invariant baseline ADHD symptom severity, and time variable as regressors (model fit statistics: χ^2 = 156.44, df = 15, p < .01, CFI = .99, RMSEA = .03, SRMR < .001). [d]Score range: 0 to 14, higher scores indicate greater digital media use. Total number of 14 digital media activities engaged in at a high frequency rate ('many times per day') over the preceding week. [e]Time continuous regressor variable scored 6-month=0, 12-month=1, 18-month=2, 24-month=3. [f]Interaction term added in subsequent model; bs for other regressors are from model excluding the interaction term. [g]Adjusted model included the time-invariant baseline digital media use variable, the time-invariant baseline ADHD symptom severity score variable, the time variable, and all baseline time-invariant covariates as simultaneous regressors (fit statistics: χ^2 = 515.45, df = 90, p < .01, Comparative Fit Index = .97, Root Mean Square Error of Approximation = .04, Standardized Root Mean Square Residual = .01). [h]All continuous covariates were included was a raw continuous scale score. Age in years (Range 13.7 to 17.2). Delinquent behavior (Score range:11 to 66, with higher scores indicating greater frequency of engaging in 11 different delinquent behaviors within the past 6 months. Each behavior rated 1 [never] to 6 [10 or more times] × 11 behaviors. CESD (score range from 0 to 60, with higher scores indicating greater severity of past-week depressive symptoms. Each symptom rated 0 [rarely or none of the time; 0-1 days] to 3 [most or all of the time; 5-7 days] × 20 symptoms]. [i]Other race/ethnicity includes students who selected 'Native Hawaiian or Pacific Islander,' 'Multiethnic/Multiracial,' or 'Other' options for the forced-choice race/ethnicity question.

eTable 7. Estimates of internal consistency, stability, and associations among modern digital media use and ADHD symptom severity across time points among students at all levels of baseline ADHD symptoms

	Variable							
Variable	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1. Digital Media[a] - Baseline	(.86)							
2. Digital Media[a] - 12-month follow-up	**.49**	(.84)						
3. Digital Media[a] - 24-month follow-up	**.39**	**.48**	(.84)					
4. ADHD symptom score[b]-Baseline	.15	.07	.07	(.92)				
5. ADHD symptom score[b] - 6-month follow-up	.13	.09	.07	**.54**	(.94)			
6. ADHD symptom score[b] - 12-month follow-up	.12	.13	.08	**.54**	**.60**	(.94)		
7. ADHD symptom score[b] - 18-month follow-up	.13	.09	.13	**.51**	**.54**	**.63**	(.94)	
8. ADHD symptom score[b] - 24-month follow-up	.08	.09	.15	**.51**	**.55**	**.62**	**.63**	(.93)

Note. [a]Score range: 0 to 14, higher scores indicate greater digital media use. Total number of 14 digital media activities engaged in at a high frequency rate ('many times per day') over the preceding week. [b]Current self-report ADHD symptom scale score range: 0 to 54, higher scores indicate more severe ADHD symptoms. Each symptom rated 0 (Never or Rare) to 3 (Very Often) × 18 symptoms. Estimates along the diagonal in parentheses represent Chronbach's alpha internal consistency values. Other values are Pearson correlation coefficients. Bold values represent stability coefficients. All estimates $p \leq .001$.

eReference

1. Meerkerk G-J, Van Den Eijnden RJ, Vermulst AA, Garretsen HF. The compulsive internet use scale (CIUS): some psychometric properties. *Cyberpsychology & behavior*. 2009;12(1):1-6.