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Materials Organization, Planning, and Homework Completion in Middle School Students with ADHD: Impact on Academic Performance

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Abstract

This study evaluated the homework functioning of middle school students with ADHD to determine what aspects are most predictive of school grades and the best source (e.g., parents or teachers) for obtaining this information. Students with ADHD in grades 5–8 ($N = 57$) and their parents and teachers completed the Children's Organization Skills Scales (COSS) to measure materials organization, planning, and time-management, and parents completed the Homework Problems Checklist (HPC) to examine homework completion and homework materials management behaviors. Regression analyses revealed that parent-rated homework materials management and teacher-rated memory and materials management were the best predictors of school grades. These findings suggest that organization of materials is a critical component of the homework completion process for students with ADHD and an important target for intervention. Teachers were the best source of information regarding materials organization and planning, whereas parents were a valuable source of information for specific homework materials management problems.

Keywords

ADHD; Adolescents; Organization; Time-Management; Homework

Attention-Deficit/Hyperactivity Disorder (ADHD) is one of the most common childhood disorders (Froehlich, Lanphear, Epstein, Barbaresi, Katusic, & Kahn, 2007) and youth with ADHD underachieve academically relative to their peers (DuPaul & Stoner, 2003; Frazier, Youngstrom, Glutting, & Watkins, 2007). When students underachieve academically, school mental health (SMH) providers, such as school psychologists and counselors, are often relied upon to derive and implement interventions. Accordingly, SMH providers must be able to effectively evaluate the academic functioning of youth with ADHD. This is particularly important when working within a Response to Intervention (RTI) framework, where assessment results are used to guide the selection of evidence-based interventions and to monitor intervention efficacy (Knoff, 2009).

There is a significant body of research on the homework functioning of children and adolescents with ADHD. It is clear that youth with ADHD exhibit more homework problems than their peers, that the presence of comorbidities is associated with more severe problems, and that these problems are related to academic underachievement (Booster, DuPaul, Eiraldi, & Power, 2010; Langberg, Arnold, Flowers, Altaye, Epstein, & Molina, 2010; Power, Werba, Watkins, Angelucci, & Eiraldi, 2006). Studies to date have focused primarily on the impact of time spent on homework and the amount of homework assigned on students' grades and achievement scores (Cooper, Robinson, & Patall, 2006). It is clear that time spent on homework is positively associated with grades in school and that this relationship is stronger in middle and high school than in elementary school (Cooper et al., 2006). However, knowledge that time spent on homework is associated with higher grades provides minimal information for SMH providers regarding how to intervene when homework problems are present.

The process of completing homework is multifaceted. Successful completion of homework requires that students record assignments accurately, bring the necessary materials home, allocate time to complete work, have the ability to complete the work, bring the completed work back to school, and turn in the assignment. The process is even more complex when students are completing projects or preparing for tests that require long-term planning. Although it is clear that homework completion is associated with school grades, the relative importance of the various components of homework functioning (e.g., materials organization and planning) has received minimal attention. This type of information could be useful to SMH providers in prioritizing aspects of homework to target with intervention.

Students with ADHD frequently exhibit problems with organization and planning and these types of problems may contribute to their difficulties with homework functioning and academic underachievement. As defined in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; American Psychiatric Association [APA], 2000), four of the nine ADHD symptoms of inattention relate directly to problems with organization and planning ahead (e.g., often: loses things, is forgetful, has difficulties organizing tasks, and fails to finish tasks). In the school setting, these symptoms manifest as problems managing school materials and meeting deadlines. Youth with ADHD often have messy and disorganized desks and lockers filled with papers that need to be thrown out or filed, and they regularly come to class unprepared, without materials such as pens, pencils and books (Atkins, Pelham, & Licht, 1985; Atkins, Pelham, & Licht, 1987; Langberg, Epstein, Urbanowicz, Simon, & Graham, 2008). Youth with ADHD also frequently misplace materials, procrastinate, and fail to plan, organize actions, and set priorities (Abikoff & Gallagher, 2009; Langberg, Epstein & Graham, 2008; Power et al., 2006). Recent research demonstrates that these types of impairments increase in severity as students' progress through school (Booster et al., 2010; Langberg et al., 2010).

Despite the knowledge that students with ADHD experience problems with organization and planning, it is not clear if these problems are directly related to homework functioning or to overall academic performance. Identifying the types of problems that are most highly associated with academic performance is important because there are multiple evidence-based interventions available for use by SMH providers that each target different aspects of academic functioning (e.g. Abikoff & Gallagher, 2008; Langberg, 2011; Power, Karustis, & Habboushe, 2001; Zentall & Goldstein, 1999). For example, some interventions focus strictly on materials organization where as others focus on the process of completing homework (e.g., managing distractibility and inattention during homework completion) and/or parent-child and parent-school relationships surrounding homework. Identification of the aspects of homework functioning are most relevant to school performance will help SMH providers select appropriate evidenced-based interventions.

The purpose of the present study was to determine what aspects of homework functioning are most directly associated with academic performance, defined as grades in school. To date, most of the research on the academic functioning of students with ADHD has used standardized achievement scores as the primary indicator of academic outcome (e.g., Massetti et al., 2008; Rapport, Scanlan, & Denney, 1999). Grades warrant study separate from achievement scores because the relationship between the two indices is small to moderate and predictors of achievement scores differ from those for grades (Langberg et al., in press). Further, school grades are an important measure of academic functioning given their ecological validity. The aspects of homework functioning examined this paper are: 1) Homework completion behaviors; 2) Homework materials management behaviors; 3) Memory and materials management behaviors; 4) Task planning Behaviors; and 5) Organized action behaviors. Homework completion behaviors are those that occur during, and interfere with, the process of completing work (e.g. distractibility and daydreaming). Homework materials management behaviors include the process of bringing assignments to and from school (e.g. losing or misplacing work). Memory and materials management behaviors include more general organizational skills such as managing school supplies, returning borrowed items, and losing items. Task planning behaviors include figuring out how to start work and where to begin projects, and getting work completed on time. Organized actions include the use of lists, schedules, and calendars, and approaching work systematically. These constructs are defined further in the measures section along with example behaviors associated with each construct. A secondary aim was to evaluate differences among informants (e.g., parents, students, and/or teachers) in rating organization, planning and homework problems. Given the prevalence of materials organization and planning problems in students with ADHD, we hypothesized that these behaviors would be significantly negatively associated with school grades. We further hypothesized that teacher ratings of materials organization and planning would be the strongest predictors of grades because of teachers' daily exposure to these issues.

Method

Participants

Participants ($N = 57$) were in grades 5–8 (see Table 1 for student demographics). Students were referred to the study by teachers from 15 separate schools. Teachers were provided with recruitment flyers which described the study and stated that students with attention problems and academic difficulties and/or students with a diagnosis of ADHD were eligible to participate. Teachers then provided student names to SMH providers who contacted parents. Parents who called study staff to express interest in participation were scheduled for a screening visit to determine if participants met inclusion/exclusion criteria. To be included in the study, students had to meet DSM-IV criteria for a diagnosis of ADHD - Inattentive Type or Combined Type and have an estimated full scale IQ > 80. Diagnosis was

determined using a combination of a structured interview administered to the parent, the *Diagnostic Interview Schedule for Children – IV* (DISC-IV; Shaffer, Fischer, Lucas, Dulcan, & Schwab-Stone, 2000), and teacher ratings on a DSM-IV based scale, the Vanderbilt ADHD Rating Scale (Wolraich, Feurer, Hannah, Baumgaertel, & Pinnock, 1998). To be eligible for participation, students had to meet criteria for ADHD on the DISC-IV and have at least four symptoms in one domain endorsed as *often* or *very often* on the teacher rating. Full scale IQ was estimated using a four subscale combination from the *Wechsler Intelligence Scale for Children-Fourth Edition* (WISC-IV; Wechsler, 2003) shown to correlate highly with the full WISC-IV administration (Sattler & Dumont, 2004). Academic achievement was assessed using the *Wechsler Individual Achievement Test, Third Edition* (WIAT-III; Wechsler, 2009). The study was approved by the IRB. Parents consented and children assented to participate in the study.

Measures

Homework Problems Checklist (HPC; Anesko, Schoiack, Ramirez, & Levine, 1987)—Homework completion and homework materials management behaviors were assessed using the parent-completed HPC. The HPC is a 20 item parent-report instrument. For each item, parents rate the frequency of a specific homework problem on a 4-point Likert scale (0 = *never*, 1 = *at times*, 2 = *often*, 3 = *very often*). Higher scores on the measure indicate more severe problems. The measure has excellent internal consistency, with alpha coefficients ranging from .90 to .92 and corrected item-total correlations ranging from .31 to .72 (Anesko et al., 1987). The alpha coefficient in the current sample was .79. Factor analyses indicate that the HPC has two distinct factors (Langberg et al., 2010; Power et al., 2006) measuring homework completion behaviors (HPC Factor I) and homework materials management behaviors (HPC Factor II). These factors are consistent across general education and clinical samples. Example items from Factor I (Homework Completion) include: a) Must be reminded to sit down and start homework; b) Daydreams during homework; c) Doesn't complete work unless someone does it with him/her; and d) Takes an unusually long time to complete homework. Example items from Factor II (Homework Materials Management) include: a) Fails to bring home assignments and materials; b) Forgets to bring assignments back to class; and c) Doesn't know exactly what has been assigned.

Children's Organizational Skills Scale (COSS; Abikoff & Gallagher, 2008)—The COSS is a measure of organization, planning and time-management skills that has parent, teacher, and child versions. The COSS yields three subscale scores that have been validated through factor analysis: Task Planning, Organized Actions, and Memory and Materials Management. Items on the Task Planning subscale relate to children's proficiency with planning out the steps needed to complete tasks in order to meet deadlines. Items on the Organized Actions subscale relate to children's use of tools (e.g., planners and calendars) and strategies (e.g., lists) to accomplish tasks. Items in the Memory and Materials Management subscale relate to whether children lose items and how well they manage their materials (e.g., bookbags, binders, and supplies). Scoring the COSS generates *T*-scores for each of the subscales with scores >60 indicating a clinically significant problem. *T*-scores between 60 and 69 are considered elevated (more problems than typical) and scores > 70 are considered to be very elevated (many more concerns than typical). Internal consistency for the items included in the COSS total score as reported in the COSS Technical Manual (Abikoff & Gallagher, 2008) is high for the parent version (.98), teacher version, (.97), and self-version (.94). In the current sample, the alpha was .66 for the parent version, .85 for the teacher version, and .79 for the self-version. Test-retest reliability with the three COSS subscales is also high for the parent (.94 – .99), teacher (.88 – .93), and self versions (.94 – .96; Abikoff & Gallagher, 2008). In the present study, two teachers for each participant

completed the COSS. When participants were in the same school and in the same grade, a single teacher would have rated more than one study participant. However, no single teacher rated more than three participants in the study.

School Grades—Report cards containing school grades were collected for all participants in the study. All of the districts involved in the study used the same scale for grades where A = 4.0, A− = 3.7, B+ = 3.3, B = 3.0, B− = 2.7, etc. Grade point average (GPA) was calculated as the average of participants' core class grades (math, science, history, English). Participants' overall GPA served as the criterion variable in the analyses.

Statistical Analyses

Pearson correlations were used to examine associations between rating scale factors scores and overall GPA. Since assessments for this study were completed in the month before the end of the school year, students' fourth quarter GPA was used in the analyses. Paired sample *t*-tests, corrected for multiple comparisons, were conducted to evaluate differences between, parent, child, and teacher ratings on the COSS subscales. Next, we were interested in determining which of the COSS and HPC subscales were most highly predictive of school grades within rater. Accordingly, four regression models were run to predict overall GPA while controlling for IQ; 1) parent COSS; 2) child COSS; 3) teacher COSS; and 4) parent HPC. For each regression with the COSS, the three subscales, Tasking Planning, Organized Actions, and Memory and Materials Management, were entered simultaneously into the model. For the regression with the HPC, the Homework Completion and Homework Materials Management factors were entered simultaneously. To control for Type 1 error associated with running four separate regressions, Bonferonni corrections were applied ($p < .05/4 = p < .013$). Finally, we wanted to examine the overall predictive power of a combined, across rater model, including those variables that were significant in the initial four regressions. Accordingly, factors that demonstrated a significant relationship with GPA in the multiple regressions were combined into one model with IQ predicting overall GPA.

Results

A Kolmogorov-Smirnov test was run and the D statistic was nonsignificant ($p = .105$), indicating that the GPA data were normally distributed. Pearson correlations are presented in Table 2. None of the subscales on the parent- or child-rated COSS were significantly related to overall GPA. The Task Planning and Memory and Materials Management subscales on the teacher-rated COSS were both significantly correlated with GPA ($p < .01$). The parent-rated Homework Completion and Materials Management factors on the HPC were both significantly related to GPA ($p < .05$; $p < .001$, respectively). Comparing across parent completed rating scales, the Organized Actions subscale on the parent COSS was not significantly related to either HPC factor. The parent COSS Memory and Materials Management subscale was significantly related to the parent HPC Materials Management factor ($p < .01$) and the parent COSS Task Planning factor was significantly related to the HPC Homework Completion Factor ($p < .01$).

The mean scores across all parent- and teacher-rated subscales of the COSS were in the clinically significant range ($M_{T-scores} > 60$). In contrast, mean scores on the youth self-rated COSS subscales were in the average range. As displayed in Table 3, *t*-tests revealed that parents rated youth as having more severe problems on the COSS Task Planning subscale in comparison to teachers ($p < .001$) but there were not significant differences between teachers and parents on the other two COSS subscales. Parents rated youth as having more severe problems on all COSS subscales (all $ps < .001$) in comparison to the youth self ratings. In

addition, teachers rated youth as having more severe problems on the Organized Actions subscale ($p < .001$) in comparison to the youth self ratings.

In the regression models, none of the parent or youth COSS subscales were significant predictors of grades. The teacher-reported COSS Memory and Materials Management subscale was a significant predictor of GPA at the adjusted level ($p = .003$; see Table 4). In addition, IQ ($p = .001$) and the parent-reported HPC Homework Materials Management factor were significant predictors of GPA at the adjusted level ($p < .0001$; see Table 5), although the Homework Completion factor was not. Given these results, IQ, the teacher-reported COSS Materials Management subscale, and the parent-reported HPC Homework Materials Management factor were entered simultaneously into the final regression model. All three variables significantly predicted overall GPA ($R^2 = .46$; see Table 6). The parent rated HPC Materials Management factor accounted for 29% of the variance in GPA, the COSS Memory and Materials Management subscale 27%, and intelligence 15%.

Discussion

This study evaluated the relationship between homework completion, homework materials management, planning, and organization with the academic performance of young adolescents with ADHD. On average, parents and teachers rated adolescents with ADHD as exhibiting clinically significant problems in all areas, whereas students rated themselves in the normal range. Parent ratings of homework completion and homework materials management behaviors were both significantly associated with students' grades in school but parent ratings of organization and planning behaviors were not. Teachers' ratings of students' task planning abilities and memory and materials management behaviors were significantly associated with grades in school. Parent-rated homework materials management and teacher-rated memory and materials management significantly predicted grades in school after controlling for intelligence.

Regression analyses indicated that both parent- and teacher-reported problems with materials management, although with different measures, were significant predictors of student grades. These findings suggest that materials management behaviors are a highly important component of the academic performance of students with ADHD. Materials management behaviors include failing to bring assignments and materials home and back to school, losing assignments, and forgetting to turn in work. It makes sense that these behaviors would be the best predictors of grades because they are necessary to accomplish the end goal of turning in completed homework. The other behaviors measured on these scales, although important, are behaviors that facilitate the process of meeting the end goal (i.e., a means to an end). For example, a child could be highly distractible during homework time and have negative interactions with parents surrounding homework (i.e., HPC Homework Completion) but still accomplish the goal of completing and turning in assignments. Similarly, a child could fail to use strategies such as making lists, breaking assignments down into pieces, or using a calendar (i.e., COSS Organized Actions) but manage to get work completed and turned in with support from parents and teachers.

It is important to note that although time-management and planning behaviors (COSS Task Planning subscale) were not the strongest predictors of grades, as rated by teachers, they were significantly associated with grades (see Table 2). Accordingly, these results do not suggest that time-management and planning are not worthy of intervention. Rather, these findings suggest that SMH providers should intervene first with materials management behaviors if assessments indicate that such problems are present. This is because if a student cannot reliably bring assignments home or back to school, work will not be turned in, and grades will not improve, regardless of whether or not the student is planning more

effectively. Therefore, interventions that target organization and materials management should be put into place first and maintained, followed by interventions that introduce more complex skills such as time-management, planning, and study strategies.

It is noteworthy that although parent ratings of materials management on the COSS were not predictive of grades, parent ratings of materials management on the HPC were highly related to grades. One likely explanation for this finding is that the items on the COSS relate to materials organization in general and are not specific to homework materials. For example, items ask about forgetting to return borrowed items, trouble finding school supplies, and losing items at school. In contrast, the materials management items on the HPC are all specific to managing homework assignments. This suggests that it is management of homework materials, and not organization of materials in general, that is critical for academic performance in school. This assertion is supported by the fact that the teacher COSS Memory and Materials Management subscale was highly associated with grades. All of the teacher COSS items are related to the school environment. Given the salience of homework in the school environment, teachers likely considered homework problems prominently when responding to the COSS items.

Limitations

The sample examined in this study was relatively small which could have limited our ability to detect significant relationships between variables. The small sample also prevented us from examining potentially interesting interaction effects between the variables. The sample also consisted entirely of middle school age students with ADHD, thus limiting generalizability to elementary age children or high school age adolescents. Different skill sets may be important depending on students' grade in school. For example, time management and planning skills may become more closely related to grades in secondary school as more long-term work is assigned. In addition, the role of potential Learning Disorders (LD) was not examined when evaluating the relationship between organization, homework performance and school grades. Previous studies have shown that children with ADHD and a comorbid LD have more severe homework problems than children with ADHD alone (Langberg et al., 2010) and this may also be the case for organization and planning problems.

The impact of ADHD medication was not examined in this study. Previous research has demonstrated that problems with organization, planning and time management improve, but do not normalize, with ADHD medications (Abikoff et al., 2009). Future research should examine whether the aspects of homework performance that are most closely related to grades in school vary depending on ADHD medication status. Finally, important aspects of homework functioning that may be related to school grades were not examined in this study. Specifically, the parent/school relationship and the degree to which parents and teachers communicate about homework may be important predictors of homework functioning and school grades.

Implications for SMH Providers

These findings have implications for how SMH providers evaluate problems with organization, planning and homework performance. Students' input is unlikely to contribute significantly to the assessment process. Substantial research indicates that students with ADHD frequently rate themselves as exhibiting minimal impairment even when problems are present; a phenomenon referred to as a positive illusory bias (Gresham, Lane, Macmillan, Bocian, & Ward, 2000; Hoza, Pelham, Dobbs, Owens, & Pillow, 2002). This study contributes to a growing literature showing that the positive illusory biases are present even on self-ratings of objective constructs such as materials organization and delinquency

history (Sibley et al., 2010). Teachers seem to be the best source of information for issues surrounding materials organization and planning, whereas parents are a valuable source of information regarding specific homework problems. Specifically, the combination of a teacher completed COSS and parent completed HPC appears to be a clinically useful assessment battery for evaluating homework performance. It may be that there are additional teacher rating scales that more directly assess homework performance and therefore, would be more highly associated with grades in school. One such possibility is the recently developed *Homework Performance Questionnaire – Teacher Scale* (HPC-TS; Power, Dombrowski, Watkins, Mautone, & Eagle, 2007). Regardless of the specific measure, is clear that assessment batteries used by SMH providers for students with ADHD need to include measurement of materials organization and time-management/planning problems.

The results of this study also have implications for how SMH professionals choose to intervene following their assessment of homework problems. There is evidence to suggest that relatively simple interventions such as the use of a structured school binder and homework folder system to transfer assignments to and from school can significantly improve homework problems (Evans et al., 2009; Langberg et al., 2008). One materials organization intervention designed specifically for SMH providers involves a system whereby students keep all of their school materials in one large binder and are reinforced for meeting operationalized binder organization criteria (Langberg, 2011). The SMH provider assists the student in creating a school binder system that contains a location for recording assignments, a homework folder (with separate pockets labeled To Do and Turn In), class subject folders, and loose leaf paper for note taking. The SMH provider establishes specific operationalized criteria for keeping the binder organized (e.g., there are no loose papers and all papers are filed in the appropriate class sections) and monitors binder organization regularly (at least one time per week) by evaluating whether or not the student meets the established criteria. The student is then rewarded for meeting a certain percentage of the criteria (e.g. >75%). Another option is for the student to earn one point for each criterion met and a reward once a certain number of points (e.g. 25) are earned. This type of intervention has been shown to improve materials organization, homework performance and grades in school (Evans et al., 2009; Langberg et al., 2008). SMH professionals who are invested in improving outcomes for students with ADHD should consider integrating similar materials organization interventions into their repertoire of tools for addressing academic underachievement.

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References

- Abikoff, H.; Gallagher, R. Assessment and remediation of organizational skills deficits in children with ADHD. In: McBurnett, K.; Pfiffner, L.; Elliott, G.; Schachar, R.; Nigg, J., editors. *Attention Deficit/Hyperactivity Disorder: 21st Century Perspective*. New York: Marcel Dekker, Inc.; 2008. p. 137-152.
- Abikoff, H.; Gallagher, R. *Children's organizational skills scales: Technical manual*. North Tonawanda, NY: Multi-Health Systems Inc.; 2009.
- Abikoff H, Nissley-Tsiopinis J, Gallagher R, Zambenedetti M, Seyffert M, Boorady R, McCarthy J. Effects of MPH-OROS on the organizational, time management, and planning behaviors of children with ADHD. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2009; 48:166–175. [PubMed: 19127171]
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 4th ed.. Washington, DC: Author; 2000.

- Anesko KM, Schoiack G, Ramirez R, Levine FM. The Homework Problem Checklist: Assessing children's homework problems. *Behavioral Assessment*. 1987; 9:179–185.
- Atkins MS, Pelham WE, Licht MH. A comparison of objective classroom measures and teacher ratings of Attention Deficit Disorder. *Journal of Abnormal Child Psychology*. 1985; 13(1):155–167. [PubMed: 3973249]
- Atkins MS, Pelham WE, Licht MH. The differential validity of teacher ratings of inattention/over activity and aggression. *Journal of Abnormal Child Psychology*. 1987; 17(4):423–435. [PubMed: 2794255]
- Booster GD, DuPaul GJ, Eiraldi R, Power TJ. Functional impairments in children with ADHD: Unique effects of age and comorbid status. *Journal of Attention Disorders*. 2010 Advance online publication.
- Cooper H, Robinson JC, Patall EA. Does homework improve academic achievement? A synthesis of research. *Review of Educational Research*. 2006; 76(1):1–62.
- DuPaul, GJ.; Stoner, G. ADHD in the schools: Assessment and intervention strategies. 2nd ed.. New York: Guilford Press; 2003.
- Evans SW, Schultz BK, White LC, Brady C, Sibley MH, Van Eck K. A school-based organization intervention for young adolescents with Attention-Deficit/Hyperactivity Disorder. *School Mental Health*. 2009; 1:78–88.
- Frazier TW, Youngstrom EA, Glutting JJ, Watkins MW. ADHD and achievement: Meta-analysis of the child, adolescent, and adult literatures and a concomitant study with college students. *Journal of Learning Disabilities*. 2007; 40(1):49–65. [PubMed: 17274547]
- Frøehlich TE, Lanphear BP, Epstein JN, Barbersi WJ, Katusic SK, Kahn RS. Prevalence and treatment of Attention-Deficit/Hyperactivity Disorder in a national sample of U.S. children. *Archives of Pediatrics and Adolescent Medicine*. 2007; 161(9):857–864. [PubMed: 17768285]
- Gresham FM, Lane KL, Macmillan DL, Bocian KM, Ward SL. Effects of positive and negative illusory biases: Comparisons across social and academic self-concept domains. *Journal of School Psychology*. 2000; 38:151–175.
- Hoza B, Pelham WE, Dobbs J, Owens JS, Pillow DR. Do boys with Attention-Deficit/Hyperactivity Disorder have positive illusory self-concepts? *Journal of Abnormal Psychology*. 2002; 111:268–278. [PubMed: 12004833]
- Knoff, HM. Implementing response-to-intervention at the school, district, and state levels: Functional assessment, data-based problem solving, and evidenced-based academic and behavioral interventions. Little Rock, AR: Project ACHIEVE Press; 2009.
- Langberg, JM. Homework, Organization and Planning Skills (HOPS) Interventions: A Treatment Manual. Bethesda, MD: National Association of School Psychologists (NASP) Publications; 2011.
- Langberg JM, Arnold LE, Flowers AM, Altaye M, Epstein JN, Molina BSG. Assessing homework problems in children with ADHD: Validation of a parent-report measure and evaluation of homework performance patterns. *School Mental Health*. 2010; 2(1):3–12. [PubMed: 21544228]
- Langberg JM, Epstein JN, Urbanowicz C, Simon J, Graham A. Efficacy of an organization skills intervention to improve the academic functioning of students with ADHD. *School Psychology Quarterly*. 2008; 23(3):407–417.
- Langberg JM, Epstein JN, Graham A. The use of organizational skills interventions in the treatment of children, adolescents and adults with ADHD. *Expert Review of Neurotherapeutics*. 2008; 8(10): 1549–1561. [PubMed: 18928347]
- Langberg JM, Molina BSG, Arnold LE, Epstein JN, Altaye M, Hinshaw S, Swanson J, Wigal T, Hectman L. Patterns and predictors of adolescent academic achievement and performance in a sample of children with Attention-Deficit/Hyperactivity Disorder (ADHD). *Journal of Clinical Child and Adolescent Psychology*. (in press).
- Massetti GM, Lahey BB, Pelham WE, Loney J, Ehrhardt A, Lee SS, et al. Academic achievement over 8 years among children who met modified criteria for Attention-Deficit/Hyperactivity Disorder at 4–6 years of age. *Journal of Abnormal Child Psychology*. 2008; 36:399–410. [PubMed: 17940863]

- Power TJ, Dombrowski SC, Watkins MW, Mautone JA, Eagle JW. Assessing children's homework performance: Development of multi-dimensional, multi-informant rating scales. *Journal of School Psychology*. 2007; 45:333–348. [PubMed: 18516211]
- Power, TJ.; Karustis, JL.; Habboushe, DF. *Homework Success for Children with ADHD: A Family-School Intervention Program*. New York: Guilford Press; 2001.
- Power TJ, Werba BE, Watkins MW, Angelucci JG, Eiraldi RB. Patterns of parent-reported homework problems among ADHD-referred and non-referred children. *School Psychology Quarterly*. 2006; 21:13–33.
- Rappaport MD, Scanlan SW, Denney CB. Attention-deficit/hyperactivity disorder and scholastic achievement: A model of dual developmental pathways. *Journal of Child Psychology and Psychiatry*. 1999; 40:1169–1183. [PubMed: 10604396]
- Sattler, JM.; Dumont, R. *Assessment of Children: WISC-IV and WPPSI-III Supplement*. San Diego: Jerome M Sattler, Publisher, Inc.; 2004.
- Shaffer D, Fischer P, Lucas CP, Dulcan MK, Schwab-Stone ME. NIMH Diagnostic Interview Schedule for Children Version IV (NIMH DISC-IV): Description, differences from previous versions, and reliability of some common diagnoses. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2000; 39(1):28–38. [PubMed: 10638065]
- Sibley MH, Pelham WE, Molina BSG, Waschbusch DA, Gnagy EM, Babinski DE, Biswas A. Inconsistent self-report of delinquency by adolescents and young adults with ADHD. *Journal of Abnormal Child Psychology*. 2010; 38:645–656. [PubMed: 20309624]
- Wechsler, D. *Wechsler Intelligence Scale for Children—Fourth Edition*. San Antonio, TX: Psychological Corporation; 2003.
- Wechsler, D. *Wechsler Individual Achievement Test—Third Edition*. San Antonio, TX: Psychological Corporation; 2009.
- Wolraich ML, Feurer ID, Hannah JN, Baumgaertel A, Pinnock TY. Obtaining systematic teacher reports of disruptive behavior disorders utilizing DSM-IV. *Journal of Abnormal Child Psychology*. 1998; 26:141–152. [PubMed: 9634136]
- Wolraich ML, Lambert W, Doffing MA, Bickman L, Simmons T, Worley K. Psychometric properties of the Vanderbilt ADHD Diagnostic Parent Rating Scale in a referred population. *Journal of Pediatric Psychology*. 2003; 28(8):559–568. [PubMed: 14602846]
- Zentall, SS.; Goldstein, S. *Seven Steps to Homework Success*. Plantation, Florida: Specialty Press, Inc.; 1999.

Table 1**Student Participant Demographics (N = 56)**

Demographics	M (SD) or Percentage
Age	11.89 (.98); Range = 10 – 14
Grade	6.16 (.76); Range = 5 – 8
Gender	77% Male
Race	70% White; 30% African American
WISC-IV IQ	96.77 (12.54)
WIAT-III	
Reading	92.14 (12.63)
Math	89.25 (16.78)
Spelling	93.80 (15.22)
ADHD Diagnosis	
Inattentive Type	52%
Combined Type	48%
Comorbid Diagnoses	
ODD	45%
Anxiety	21%
Mood	2%
Parent Education (Highest Level)	
High School or less	32%
Some College	27%
College Degree	21%
Graduate Degree	20%
Family Income	
< 25,000	17%
25,000 – 75,000	40%
> 75,000	43%
ADHD Medication	
Medicated *	61%
School Services	
IEP	27%
504 Plan	3%
Resource Room	3%
Homework Support	17%

Note. WISC-IV = Wechsler Intelligence Scale for Children, 4th Edition; WIAT-III = Wechsler Individual Achievement Test, 3rd Edition;

* all students except for one were taking long acting medications; IEP = Individualized Education Plan; Resource Room = two participants received part of their classroom instruction in a self-contained, restrictive learning environment.

Table 2

Intercorrelation Matrix of Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Overall GPA	-											
2. Parent COSS TP	-.10	-										
3. Parent COSS OA	-.02	.24	-									
4. Parent COSS MMM	-.13	.53***	.41**	-								
5. Child COSS TP	-.14	.08	.03	.28*	-							
6. Child COSS OA	-.04	.07	.32*	.26	.50***	-						
7. Child COSS MMM	-.09	.16	.26*	.42**	.70***	.48***	-					
8. Teacher COSS TP	-.41**	.40**	.37**	.39**	.22	.04	.30*	-				
9. Teacher COSS OA	-.26	.16	.46***	.35**	.25	.04	.34**	.58***	-			
10. Teacher COSS MMM	-.51***	.29*	.45***	.51***	.15	.16	.27*	.68***	.72***	-		
11. HPC Homework Completion	-.27*	.41**	.25	.35**	.08	.23	.10	.15	.10	.36**	-	
12. HPC Materials Management	-.54***	.23	.25	.42**	.10	.30*	.14	.15	.16	.49***	.61***	-

Note. COSS = Children's Organization Skills Scale; TP = Task Planning; OA = Organized Actions; MMM = Memory and Materials Management; HPC = Homework Problems Checklist.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 3

Means, Standard Deviations, and Mean Comparison Results on COSS Subscales

Variable	Respondent			Tukey HSD <i>t</i> -tests ^a
	Parent	Teacher	Child	
Task Planning	69.25 (10.19)	60.76 (10.74)	57.04 (11.31)	P > T, C
Organized Actions	61.59 (5.94)	61.77 (6.28)	56.34 (9.19)	P, T > C
Materials Management	68.57 (12.83)	63.19 (13.56)	57.84 (12.12)	P > T, C

Note.

^aLetters represent group membership with all results adjusted for multiple comparisons; P = parent, T = teacher, C = Child; Standard deviations are in parentheses. COSS = Children's Organizational Skills Scale; All differences significant at $p < .001$.

Table 4

Teacher COSS Subscales Predicting GPA Controlling for Intelligence

	Grade Point Average		
	Estimate (SE)	<i>t</i>	<i>p</i>
Intelligence	.025 (.010)	2.59	.013
Teacher COSS TP	-.009 (.015)	0.59	.559
Teacher COSS OA	.036 (.028)	1.30	.198
Teacher COSS MMM	-.044 (.014)	3.11	.003

Note: COSS = Children's Organizational Skills Scale; TP = Task Planning; OA = Organized Actions; MMM = Memory and Materials Management subscale

Table 5

Parent HPC Subscales Predicting GPA Controlling for Intelligence

	Grade Point Average		
	Estimate (SE)	<i>t</i>	<i>p</i>
Intelligence	.032 (.009)	3.47	.001
Parent HPC HC	.033 (.024)	1.55	.127
Parent HPC MM	-.110 (.023)	-4.71	.005

Note: HPC = Homework Problems Checklist; HC = Factor I Homework Completion; MM = Factor II Materials Management.

Combined Model with Teacher COSS Task Planning and Parent HPC Materials Management Predicting GPA Controlling for Intelligence

Table 6

	Grade Point Average				
	R ²	Adj R ²	Estimate (SE)	t	p
Model Summary	.46	.43			
Intelligence			.026 (.009)	2.94	.005
Teacher COSS MMM			-.021 (.009)	-2.40	.003
Parent HPC MM			-.064 (.021)	-3.11	.005

Note: COSS MMM = Children's Organizational Skills Scale Memory and Materials Management subscale; HPC MM = Homework Problems Checklist Materials Management Factor II