Spring 2020

Applying the Homework, Organization, and Planning Skills (HOPS) Intervention to Elementary Students with ADHD

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APPLYING THE HOMEWORK, ORGANIZATION, AND PLANNING SKILLS (HOPS) INTERVENTION TO ELEMENTARY STUDENTS WITH ADHD

A Dissertation
Presented to
The Faculty of the Department of Psychology
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
Of the Requirements for the Degree
Doctor of Psychology

By
Ayanna M. Peake

May 2020

APPLYING THE HOMEWORK, ORGANIZATION, AND PLANNING SKILLS (HOPS) INTERVENTION TO ELEMENTARY STUDENTS WITH ADHD

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I dedicate this dissertation to the memory of my father, Gary Arnold Peake, whose dream deferred is now accomplished by proxy, and to my mother, Bettie Marie, who always encourages me to wholeheartedly chase my dreams no matter how many miles away they lead me.

ACKNOWLEDGEMENTS

This dissertation would not be possible without the support of my "village," those who encouraged and supported me along the way. I am grateful to the teachers, parents, and students who participated in this research study. Dr. Carl Myers, my dissertation chair, gracefully helped me navigate this process. I would also like to thank the other members of my committee, Dr. Sharon Blevins, Dr. Gregory Griffith-Ellis, and Dr. Adam Lockwood for their time and commitment to my research endeavors. I am forever grateful for my colleagues and mentors who are part of my DMF family for their endless encouragement and reflections to assist me with reaching this point in my journey towards becoming Dr. Ayanna Peake. Last but not least, I sincerely appreciate the prayers and kind words of my family, friends, and work colleagues that kept me grounded throughout this journey. Collectively, my "village" has provided continuous affirmation that has made all of the difference.

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Ayanna Peake May 2021 88 pages

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Students need appropriate executive functioning (EF) skills to improve their academic achievement. The Homework, Organization, and Planning Skills (HOPS) Interventions were implemented for 16 sessions with three elementary students with ADHD and executive functioning (EF) deficits. The study aimed to improve the homework, organization, and time management skills of each participant. The interventions were expected to decrease both EF deficits and teacher reports of homework behavior difficulties. This study used a multiple baseline across participants single subject research design with interventions implemented concurrently. A behavior rating scale provided pre and post-intervention data on the participants' EF deficits. Classroom teachers also provided weekly feedback on the participants' homework behaviors. Parent, teacher, and student self-report feedback indicated inconsistent results. Limitations for implementing HOPS at the elementary school level include a lack of relevance for younger students and a small sample size. Although the HOPS interventions were used successfully in other research studies, the present study does not indicate favorable results for participants in the fifth grade.

Chapter I: Introduction

A consistent measure of education is the academic achievement of students. Universally, it is expected that students will learn and achieve as a result of being taught in school. Yet for some students, there are barriers to their learning that take many shapes and sizes. One potiential barrier to academic achievement is Executive Functioning (EF) skill deficits. Executive Functioning skills are as universal as the goal of education, and their impact, while often hidden, is paramount to student success. This literature review and subsequent research study explores executive functioning, the impact of deficits in specific groups of students, and alternatives for increasing the academic achievement of students with deficits in executive functions.

This review of literature explores the dynamic relationship between executive functioning and Attention-Deficit/Hyperactivity Disorder (ADHD) to investigate their impact on children and adolescents. The impact of EF and ADHD on academic achievement is explored individually and collectively. Though the realities of a lifelong condition such as ADHD may seem daunting, analyzing the findings of current research provides several treatment options to improve executive functioning and successful coping. An overview of research studies mitigating the impact of these variables reveals options for supporting students who have EF deficits and/or an ADHD diagnosis. This research study implements a targeted-intervention in the school setting to determine its viability for supporting students with EF deficits.

There are many ways to define the executive functions that gradually develop in individuals. The demonstration of EF skills will vary based on the child's developmental level as each EF skill will look differently as children get older. Regardless of how they

are expressed or defined, EF skills are important for success in life. For children, these skills are important to succeed in school.

Many students with EF deficits (and/or ADHD) perform poorly in school. This impacts the quality of their education. A "lower quality" education impacts students for life by limiting access to future opportunities. Behavior deficits limit students with EF (and/or ADHD), and they are more likely to have negative school/life experiences and under achieve in school. It may be possible to interrupt this negative cycle through targeted interventions for students with deficits due to EF and ADHD. Interrupting this cycle can result in an increase in academic success that can change the trajectory for a student's future.

While some research has shown that targeted interventions to improve EF skills improves the academic achievement of students with ADHD at the middle and high school levels (Langberg, Epstein, Urbanowicz, Simon, & Graham, 2008; Langberg et al., 2011), there is a gap in research on whether these same interventions are effective with younger students. Additionally, more research is needed to explore effective interventions in the school setting. Implementing supports where children and adolescents spend the most time may lead to more effective support for children struggling with EF deficits and ADHD.

The primary purpose of this study is to determine if a targeted, psychosocial intervention called Homework, Organization, and Planning Skills (HOPS, Langberg, 2011) implemented by a school mental health provider can decrease the EF deficits in elementary age children. This study evaluates the effectiveness of the HOPS intervention on three elementary students with ADHD. More specifically, this study evaluates the

impact of HOPS on the EF skills of organization, time management, and planning in elementary age children.

This study has the following research questions:

1. What is the impact of the Homework, Organization, and Planning Skills (HOPS) program on executive functioning ratings of elementary students?

2. Is HOPS effective in increasing the organizational, time management, and planning skills of participants and in decreasing the teacher reports of homework behavior difficulties in elementary students?

Chapter II: Literature Review

Executive Functioning

Defining executive functioning. A review of literature reveals that there are many theories and ideas to define execution functioning. Research does not provide one coherent definition of executive functions although Seidman (2006) indicates that there is some consensus that executive processes "include attention and inhibition, task management, planning, monitoring, and decoding" (p. 468). Although executive functions are distinct from skills such as memory or perception, Seidman (2006) cites research noting the considerable commonality between EFs and mechanisms of learning and memory, specifically the skills involved in encoding and retrieving information. Seidman (2006) documents that although there are at least 33 definitions of EF used in recent research and literature, most investigators conclude that executive functions are "self-regulatory functions incorporating the ability to inhibit, shift set, plan, organize, use working memory, problem solve and maintain set for future goals" (p. 468).

Langberg, Dvorsky, and Evans (2013) defines executive functions as a broad range of higher-order cognitive processes helping with self-regulation, making decisions, and goal-directed behaviors. More specifically, they note that executive functions include "the ability to engage in sequences of planned, goal-directed, behaviors over prolonged periods of time" (p. 1146) providing the skills necessary so individuals can set goals and take specific planned steps to accomplish goals. Furman (2005) broadly defines EF as the ability to organize, flexibly think, focus in spite of interference, and self-monitor. Furthermore, Tamm, Nakonezny, and Hughes (2014) define executive functions as the skills that permit an individual to plan, organize information in working memory, and decide an appropriate action with the memories.

Additional definitions of EF are available from a neurological perspective accounting for brain behaviors. Best and Miller (2010) broadly define executive functions as the activity occurring in the prefrontal cortex, where cognitive processes influence goal-directed behavior. Dawson and Guare (2012) identify the brain as the location of executive function skills, and more specifically executive skills are found in the frontal lobe of the brain, directly behind the forehead. Dawson and Guare (2010) identify 11 EF skills that they believe have a specific impact on academic performance and social adjustment. These EF skills include metacognition, flexibility, goal-directed persistence, time management, organization, planning/organization, task initiation, sustained attention, emotional control, working memory, and response inhibition.

Meltzer (2010) provides a useful analogy to conceptualize executive function skills through comparing the view of a person standing at the top of a mountain who can see a bird's eye view of the "big picture" versus a person standing at the foot of the mountain who can only see lots of leaves on individual trees. "Executive function processes allow the viewer to shift back and forth flexibly between the big picture seen from the mountaintop and the numerous details seen from the bottom of the mountain" (Meltzer, 2010, p. 6).

Development of executive functioning. Marlowe (2000) notes EF begins developing as early as age 2 and most EF skills are at or near adult levels by ages 10 to 12 years. Between birth and preschool, it is noted that rapid improvements occur in EF, but there are specific skills that are not refined until adolescence or early adulthood because of their complexity. While executive functions begin developing before birth, they are initially seen in action during the first few years of life. Executive functions then

gradually develop, increasing in strength during the developmental periods of childhood and adolescence. This progression continues through the first two decades of life (Best & Miller, 2010; Dawson & Guare, 2010, 2012).

Deficits in executive functioning. Although EF skills develop gradually over time, some children do not fully develop EF skills. Dawson and Guare (2010) identify three ways that EF deficits in children can be categorized: (a) deficits without a diagnosed condition, (b) deficits due to a diagnosed condition, and (c) deficits confounded by complex learning and/or social-emotional factors. Dawson and Guare (2010) consider ADHD as a preeminent disorder characteristic of executive skills deficits because of the prevalence of ADHD rates in the population. They argue that ADHD is, essentially, a major deficit in executive skills. Seidman (2006) concludes that not all individuals with ADHD have deficits in their executive functions, while also acknowledging that the characteristics are very similar.

Marlowe (2000) cites research indicating that deficits in executive functions have been reported in children with traumatic brain injuries, fetal alcohol syndrome, epilepsy, meningitis, phenylketonuria, heavy lead burden, very low birthweight, hydrocephalus, spina bifida, and ADHD. It is noted that these disorders result in either significant disorders of EF or a complete inability to develop these skills. Marlowe (2000) also highlights that children with deficits in executive skills often have a variety of academic, cognitive, and social challenges. Although there are specific disorders or developmental conditions where EF deficits are evident, there are also youth who struggle without a definitive diagnosis or condition. Dawson and Guare (2010) note that they have

encountered an increasing number of students with EF deficits who do not meet diagnostic criteria for specific disorders.

It is possible to intervene to strengthen EF deficits. Dawson and Guare (2010) recommend that EF skills be taught in the way children learn them through adult models: externally with gradual fading of the modeling, instruction, supervision, and cues until the child independently demonstrates the skill. They recommend directly teaching EF skills through a series of steps. These steps include identifying skill deficits, setting goals, teaching steps to accomplish these goals, giving feedback, evaluating the effectiveness, and then phasing out the support.

Educational impact. EF processes are critical to academic success because they help students perform more efficiently. Meltzer (2010) argues that our 21st-century society defines academic success by how well students use their time, organize, flexibly shift between approaches, self-monitor, reflect on their work, prioritize and distinguish details from main ideas. Meltzer (2010) collectively defines these skills as EF processes that also includes goal setting, planning, taking tests, and manipulating information in working memory. Langberg et al. (2011) and Langberg, Dvorsky et al. (2013) assert that EF skills like planning, organizing, and self-regulation increase rapidly during the middle childhood phase of development. As students progress through grade levels, the need for efficient EF is important for academic success because students are expected to manage their classwork, homework and test preparations for multiple teachers. Furthermore, Best and Miller (2010) indicate that the relationship between EF and academic achievement (e.g., reading and math) are robust and consistent over time in representative general education samples.

Multiple times in a school day, students demonstrate mastery of their EF processes as a measure or indicator of their academic performance (Meltzer, 2010). Children with weak EF skills struggle with homework (e.g., having materials to complete it or forgetting to turn in homework), distractibility, disorganization, problems beginning tasks, and getting distracted easily. Students whose academic performance does not match their perceived potential may be labeled and viewed in negative ways by peers and teachers as poor EF process are often associated with academic difficulties. Though most of these skills are not explicitly taught, when students struggle with these skills their performance and profile as a student is incongruent with their potential.

Using the analogy of a clogged funnel, Meltzer (2010) explains that students with deficits in EF frequently experience information overload when they cannot process information fast enough or shift approaches flexibly. The result is seen in their academic performance because they work inefficiently and struggle to demonstrate their knowledge. They struggle with study skills and poor grades and as they progress into higher grades, these difficulties become more obvious (Meltzer, 2010). Specifically, students may struggle with taking notes, studying, planning, executing and completing projects in a timely manner, sustaining attention for long detailed assignments, or turning in work on time. Starting in elementary school, EF processes affect academic areas like reading comprehension, written language, math problem solving, long term projects, and test taking (Meltzer, 2010).

Attention-Deficit/Hyperactivity Disorder (ADHD)

Prevalence. Attention-Deficit/Hyperactivity Disorder (ADHD) is well-known as the most common neurobehavioral condition in childhood affecting between 3-9% of all

school-aged children and about 5% of children worldwide (APA, 2013; Crippa et al., 2015; Daley, 2006; Davey, 2014; Dvorsky & Langberg, 2016; Furman, 2005). ADHD is defined by the cluster of symptoms that occurs in the developmental period and persists throughout the life of the child or adolescent continuing into adulthood (Daley, 2006; Davey, 2014; Furman, 2005; Langberg et al., 2016; Seidman, 2006; Shapiro, 2011; van de Weijer-Bergsma, Formsma, Bruin, & Bögels, 2012). ADHD used to be considered a childhood disorder but it has lifespan effects and consequences. A review of the literature indicates that these symptoms persist into adulthood for 25-40% of adults causing difficulties in interpersonal, vocational, and cognitive domains (Daley, 2006; Shire ADHD Institute, 2017).

Characteristics. ADHD is a persistent pattern of inattention and/or hyperactive-impulsive behaviors which are significantly higher than what is typically expected at the child's current developmental level (APA, 2013; Davey, 2014; Schroeder & Kelley, 2009; Seidman, 2006). The symptoms of ADHD cause significant impairment in social, school, or vocational functioning in two or more settings making their identification and treatment critical for improved functioning and outcomes (APA, 2013; Crippa et al., 2015; Daley, 2006; Davey, 2014; Dvorsky & Langberg, 2016; Shapiro, 2011). Shire ADHD Institute (2017) reported that parents/caregivers of children and adolescents with ADHD perceive this condition to negatively impact life at school, daily life activities, and social functioning. In addition, researchers have found that children diagnosed with ADHD usually experience chronic and pervasive difficulties in multiple domains including social and academic domains, motor coordination, executive functioning tasks related to response inhibition, attention, and work memory, unintentional injury, sleep

problems, family conflict, impaired peer relationships, and age-inappropriate symptoms of attention, hyperactive, and impulsive behaviors (Chronis, Jones, & Raggi, 2006; Daley, 2006; Dvorsky & Langberg, 2016; van de Weijer-Bergsma et al., 2012).

Comorbidity. Another significant factor related to ADHD in children and adolescents is that it is highly comorbid with other psychiatric conditions (APA, 2013; Bahçivan Saydam, Ayvaşık, & Alyanak, 2015; Daley, 2006; Furman, 2005; Shapiro, 2011). Becker, Luebbe, and Langberg (2012) reported that approximately 45-84% of youth with ADHD meet criteria for Oppositional Defiant Disorder (ODD) or Conduct Disorder (CD), and Daley (2006) notes that approximately 50-60% of children meet criteria for ODD, even in the preschool period. Daley (2006) also indicated that up to half of youth with ADHD have a comorbid anxiety or depressive disorder. Seidman (2006) also notes that people with ADHD frequently have comorbid antisocial, substance abuse, mood, anxiety, or learning disorders. The breadth and depth of impact is expansive with little room for doubt on the significance of an ADHD diagnosis.

Perspectives on ADHD and Executive Functioning

Environmental. The etiology of ADHD is best defined by both environmental and biological/genetic influences (Davey, 2014). Environmental factors such as maternal substance use (e.g., alcohol, smoking, drugs), birth complications, contaminants (e.g., lead exposure), parenting style, diet, or socioeconomic status influence the likelihood and developmental trajectory of ADHD in children and adolescents (Daley, 2006; Davey, 2014). The presence, severity and intensity of environmental factors influence the diagnosis and trajectory of ADHD in children and adolescents. Deficits in EF are one of

many risk factors that increase the likelihood that a child with ADHD will experience negative outcomes.

Medical. Furman (2005) provides another view of ADHD from the perspective of a medical doctor. He explores the definition of ADHD as a disease and argues that instead, ADHD should be viewed as a group of symptoms related to a behavioral pathway. ADHD can, however, create problems in emotional control, psychological functioning, and/or learning problems. Furman concludes that we should look at individual children and their symptoms when treating ADHD. Specifically, we should assess their educational, psychological, psychiatric, and family needs in ascertaining the level of impact of ADHD symptoms and behaviors.

Biological. Biologically, ADHD is related to genetics and is one of the most heritable psychiatric conditions in children (APA, 2013; Davey, 2014). It is very common for both parents and children to experience ADHD in their lifetime. Additionally, Davey (2014) notes that neurological differences from MRI studies of those who are and are not diagnosed with ADHD include a slightly smaller brain size, smaller volume in portions of the brain, and slower development of brain structures. When investigating the neuropsychological functioning in individuals with ADHD across the lifespan, Seidman (2006) found several interesting trends from the literature on the neurocognitive characteristics of ADHD from early childhood through adulthood. First he notes that children, adolescents, and adults diagnosed with ADHD have similar clinical characteristics, comorbidities, and deficits in life domains. This is important because it reaffirms the notion that ADHD is not merely a “childhood condition” but that it can influence an individual’s life trajectory.

Comorbidity/psychological. Through an exploration of literature, Seidman (2006) concludes that "executive dysfunctions are correlates of ADHD regardless of gender and age, and these deficits are exacerbated by co-morbidity with learning disabilities such as dyslexia" (p. 478). While literature shows a clear relationship between deficits in EF and many psychiatric disorders, including ADHD (Seidman, 2006; Thorell & Wåhlstedt, 2006), it is important to note that not all children with ADHD suffer from deficits in EF. Therefore, a diagnosis of ADHD should not be solely based on the performance on neuropsychological tasks measuring EF. Seidman (2006) notes that executive functioning deficits are not isolated to only those with a diagnosis of ADHD because research indicates that EF deficits are commonly found in many psychiatric disorders. Furthermore Seidman (2006) summarizes that data supports the hypothesis that in spite of age and gender, EF difficulties are correlates of ADHD that are exacerbated by co-morbidity with learning disabilities like dyslexia.

Neuropsychological. Research on ADHD and EF present a myriad of definitions on what exactly EF is and its relationship to ADHD. Executive functions are considered related to the prefrontal/frontal lobes of the brain (Bahçivan Saydam et al., 2015; Berlin, Bohlin, & Rydell, 2003; Seidman, 2006). Bahçivan Saydam et al. (2015) note that neuropsychological theories hypothesize ADHD to arise from a deficit in executive functioning because it is the main characteristic of ADHD. Their neuropsychological theory defines executive function as the "higher cognitive processes that control conscious and voluntary self-regulation and goal-directed behavior, such as response inhibition, planning, abstract thinking, working memory, attention shifting, verbal fluency, and problem solving" (p. 386). Research studies have shown that subjects with

ADHD performed more poorly than controls on neuropsychological tests of EF that include response inhibition, planning, working memory, set-shifting, or cognitive flexibility (Bahçivan Saydam et al., 2015).

Consequences of ADHD and EF

Academic achievement. ADHD often has a negative impact on academic performance. Colomer, Berenguer, Roselló, Baixauli, and Miranda (2017) examined the underlying causes for why children with ADHD experience lower academic achievement compared to their non-ADHD peers. The authors propose that two main factors can impact academic performance: (a) the symptoms of ADHD, and (b) executive functions. EF impacts academic achievement because of its influence on learning behaviors (e.g., motivation, attitude toward learning, persistence). These are considered to be key aspects of the learning process. For children with and without ADHD, the authors found that the measure of behavioral regulation predicted the search for problem-solving strategies, and the measure of metacognition was a good predictor of motivation. In the ADHD group, the attitude toward learning was only predicted by the metacognition measure. The implication of this study is that the executive functions have more influence on learning behaviors on children with ADHD. Proactively, educators and those intervening with children need to specifically focus on developing EF as early as possible in school so that learning behaviors are strengthened.

Barry, Lyman, and Klinger (2002) studied the frequency of academic underachievement in a group of ADHD and non-ADHD children, and the degree that executive functions and behavioral criteria predict difference between cognitive ability and academic achievement. They found that the severity of ADHD symptoms as reported

by parents significantly predicts academic underachievement in reading, writing, and math. Shapiro (2011) studied academic underachievement from a neurodevelopmental perspective exploring the many causes for this pattern of behavior. Shapiro (2011) states that the primary factor in determining how a child is impacted by academic underachievement is the disorder or mental health condition. Shapiro claims that the trajectory of underachievement is a result of how diagnoses of different severity interact with a variety of characteristics of the child, school, and family. One of the conditions Shapiro suggests impacts academic underachievement is ADHD. Alternately, it is noted that children with ADHD often had difficulty learning to read and comprehend, learning multiplication and other math facts, with written language and coexisting motor coordination disorders.

Harris, Danoff Friedlander, Saddler, Frizzelle, and Graham (2005) identified a pattern of underachievement in children with ADHD that is particularly noteworthy with inconsistencies in daily tasks like class and homework. Specifically they cite research stating that up to 80% of students with ADHD show problems with performing academically. Although medication and behavior modification programs are often used to treat behavior difficulties in children with ADHD, academic and social problems persist and tend to be resistant to these interventions. Harris et al. (2005) identify the completion and accuracy of independent classwork and homework and learning the curriculum as target behaviors to address with students diagnosed with ADHD.

Langberg, Dvorsky et al. (2013) explored the specific components of executive functions associated with academic functioning in adolescents diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD). Using the Behavior Rating Inventory of

Executive Function (BRIEF, Gioia, Isquith, Guy, & Kenworthy, 2000), they measured the relationship between academic outcomes and working memory, inhibition, and planning and organization. Their study concludes that the EF Planning and Organization subscale ratings from parents and teachers predicted academic grades above and beyond symptoms of ADHD and related covariates. They also found that parent ratings on the Shift subscale predicted grades and/or homework problems. This subscale indicates how easily youth effectively move between tasks/situations. On the teacher BRIEF, the Organization of Materials subscale was significant in predicting homework problems. Langberg, Becker, Epstein, Vaughn, and Girio-Herrera (2013) concludes that the ability to plan and organize is a very imperative component of academic functioning for middle school aged youth diagnosed with ADHD.

Langberg, Becker, et al. (2013) focused on youth with ADHD due to the extensive research indicating that children and adolescents with ADHD often have academic impairments as measured by grades and standardized achievement scores and they are at greater risk for retention and dropping out of school than their peers. Moreover, they propose that for youth with ADHD, EF is a mitigating factor in the pathway between academic impairment and ADHD symptoms. Langberg, Becker, et al. (2013) cites longitudinal data indicating that childhood EF predicts academic achievement as measured by standardized tests. They argue that school grades are a better measure of academic performance for students because grades include a combination of academic knowledge, performance, classroom participation, effort, behavior, attendance, and homework performance. Likewise school grades have powerful connotation to

parents and educators and they are used to determine promotion, retention, and college admittance.

Social, emotional, and adaptive functioning. Wehmeier, Schacht, and Barkley (2010) researched how ADHD impairs children socially and emotionally causing a negative impact on their quality of life. One specific negative impact noted is that "ADHD is associated with numerous developmental, cognitive, emotional, social, and academic impairments as well as various health risks that can significantly affect the academic performance of adolescents and their parents' social time" (p. 209). Additionally, Wehmeier et al. (2010) stated that ADHD affects that psychosocial functioning of youth and their families. The impact of ADHD on families includes increased tension and stress in relationships and finances. Social relationships with peers are also impacted as Wehmeier et al. (2010) noted that youth with ADHD often have a variety of problem behaviors that result in many not having close friends by third grade.

Wehmeier et al. (2010) indicate that disruptions in the brain's EF system may be part of the cause for the behaviors and difficulties associated with ADHD. EF includes the skills for a person to self-regulate emotion, inhibit responses, fluidly use working memory and focus actions towards goals. Individuals without these deficits in EF are better able to persist on tasks and direct their behaviors towards tangible goals. Furthermore, Wehmeier et al. (2010) suggest that there is a relationship between ADHD and deficits in adaptive functioning in education, family, community, and social settings that permeate into other areas by adulthood. Dawson and Guare (2010) found on the BRIEF parent, teacher, and self-report scales that children with ADHD show significantly more executive skill weaknesses than controls. Given this, Dawson and

Guare (2010, 2012) advocate for early and sustained EF skills intervention for children diagnosed with ADHD.

Treatment Options to Intervene with EF and ADHD

Overview of general strategies. A review of the current literature on ADHD and EF indicate that these two interact dynamically in the lives of children and adolescents in a myriad of ways. Daley (2006) indicates that ADHD symptoms have been noted to persist into adulthood for up to 40% of children with ADHD meeting full criteria for ADHD in adulthood. Likewise, it is noted that adults with ADHD often have impairments in their interpersonal, vocational, and cognitive domains. Despite the documented negative interactions between ADHD and EF, research literature provides several promising treatment options at various stages of development. This section of the literature review will provide an overview of general interventions for ADHD and EF, and then review specific intervention strategies and programs for both ADHD and EF.

One intervention strategy for ADHD is medication. Medication therapy is one of the most common forms of treatment for individuals with ADHD. When used with children, there is controversy regarding whether or not medication is the most appropriate treatment (Chronis et al., 2006; Daley, 2006). Daley summarizes that these objections include ethical objections to using medication to modify children's behaviors, concern over the long-term effectiveness of stimulant medication, and the side effects of medications. Furthermore it is noted that there is a lack of research on the long-term effects of stimulant medication on preschool children's physical and neurological development (Daley, 2006).

Another general intervention strategy is to intervene early and include parent training **(**Al-Yagon, Forte, & Avrahami, 2017; Chronis et al., 2006; Daley, 2006). As an example, Miranda, Presentacion, Siegenthaler, and Jara (2011) researched the effects of a psychosocial intervention on EF in children with ADHD. Twenty-seven youth ages 7 to 10, their parents, and teachers participated in an intensive psychosocial intervention on executive functioning. Comparing data of the children who participated and those who did not participate indicates there were significant differences. The researchers concluded that implementing psychosocial interventions early positively affects some executive functions of children with ADHD.

In general, behavioral interventions have been found to be effective for addressing ADHD and EF concerns. Pfiffner et al. (2014) completed a meta-analysis to understand the efficacy of behavioral interventions for children with ADHD related problems. Pfiffner et al. reported definitive benefits of behavioral interventions on some outcomes for children and parents. Pfiffner et al. argues that interventions for ADHD need to address more than a decrease in symptom presentation. Rather, the broader impact of behavioral interventions should be considered given that in some instances it has a greater impact than the use of medication.

There are a broad range of psychosocial interventions designed to improve ADHD concerns and EF skill deficits. For children with ADHD and/or EF deficits, interventions implemented within the school environment during the school day when EF problems occur is imperative (Wehmeier et al., 2010). The next section of the literature review will now describe examples of psychosocial interventions for ADHD and EF deficits in the community and school settings. After that, the HOPS program will be

reviewed as it is the focus of this dissertation research.

Explicit instruction in EF. Meltzer (2010) proposes that a solution to address EF deficits is to provide explicit instruction to address the behaviors of concern related to academic performance. Meltzer goes on to note such instruction would help all students, and specifically students with attention and/or learning difficulties. That is, a way to increase students' academic performance is to teach them strategies that directly address executive functions. Meltzer proposes that if students can effectively learn and apply EF strategies, they will become more efficient in their school day and their academic success will increase. Furthermore, these difficulties can become strengths for students when they apply strategies for organizing, prioritizing, and checking, and they can shift easily between different viewpoints and approaches.

Family-school success (FSS). Power et al. (2012) researched the effectiveness of a psychosocial, family-school intervention, Family-School Success (FSS) on second to sixth grade students diagnosed with ADHD. The intervention program was implemented over 12 weeks in a mixture of group and individual sessions and two school-based consultations. The main components of the FSS program included daily report cards, behavioral homework interventions, and conjoint behavioral consultation. The results of this study indicated that the FSS intervention program was significantly effective on parenting behavior, homework performance, and the quality of the family-school relationship. Power et al. (2012) indicate that research supports psychosocial interventions focusing on school and families. Furthermore they propose that behavior interventions implemented at school are effective to decrease ADHD symptoms and improving academic functioning.

Challenge horizons after-school program (CHP). As previously stated, a diagnosis of ADHD indicates that the individual is experiencing a chronic mental health condition that typically persists into at least adolescence. Multiple randomized controlled trials have shown the effectiveness of the Challenge Horizons After-School Program (CHP). This psychosocial intervention was created with a target audience of adolescents with ADHD. Langberg et al. (2016) identify a variable that predicted response to this psychosocial intervention- a strong working alliance between the counselor and adolescent, as reported by the adolescent. Furthermore their research indicates that the CHP intervention is most effective on improving homework and materials management. Langberg et al. (2016) found that the interventions could be more effective if parents were directly targeted and engaged.

Collaborative life skills program (CLS). Academic problems are typical for children with ADHD starting in elementary school. Although most children with ADHD have the knowledge needed to achieve academically, they tend to perform at a lower level than peers due to a lack of work completion, poor test scores, grades and achievement scores (Pfiffner, Villodas, Kaiser, Rooney, & McBurnett, 2013). Pfiffner et al. (2013) researched the effectiveness of the Collaborative Life Skills Program (CLS) for youth with behavior and/or attention problems. CLS is a collaborative school-home intervention program that was implemented for students in second to fifth grades by school-based mental health professionals at their school over a 12-week period. CLS included parent training, classroom intervention, and a child social and independence skills group as part of the program.

Pfiffner et al. (2013) found that the improvements in participants' organizational skills mediated the relationship between ADHD symptoms and academic skills. This research was also significant in showing that evidence based interventions can effectively be implemented in a natural school setting by school staff for students in need. This is noteworthy because the bulk of research on psychosocial interventions occurs in highly controlled classrooms or university settings and is delivered by non-school personnel. The authors note that by targeting both the home and school environments, CLS provides comprehensive support of children. Additionally this research is noteworthy because it supports previous research indicating that developing skills and treating specific areas of impairment in youth with ADHD is imperative in lieu of simply focusing on ADHD symptom reduction.

Child life and attention skills (CLAS). Pfiffner et al. (2014) hypothesize that disorganization and working memory deficits found in children with ADHD play a role in the academic difficulties these children display in school. Pfiffner et al. studied the efficacy of a psychosocial intervention for youth with ADHD-Inattentive type. The intervention program, Child Life and Attention Skills (CLAS) was unique in its implementation across school and home settings. The CLAS intervention demonstrated effectiveness on teacher reports of inattention, organizational skills, social skills and overall global functioning. Parents also reported noteworthy improvement in their child's organizational skills. Pfiffner et al. conclude that the direct involvement of teachers and parents in the CLAS intervention program is pivotal to the success found across settings for these children. Additionally they propose that this type of success speaks to the

imperative need for treatment to occur across-settings with coordination between parents, teachers, and youth.

Homework. Mautone, Marshall, Costigan, Clarke, and Power (2012) researched homework performance in children with ADHD in second to sixth grades. Their study indicates a positive relationship between the amount of time spent and quantity of homework and academic performance (e.g., standardized tests, grades). Homework is also known to be a method of communication between families and teachers. Despite the benefits of homework, Mautone et al. indicate that for specific students there are many barriers to homework completion and their subsequent academic performance. Their research indicates that homework is a unique challenge for children with ADHD. If a student also has difficulties with learning, this compounds the barriers to academic success through homework. Another effect of homework difficulties on students with ADHD is the impairment of relationships with parents and teachers due to either a failure to complete assignments or inappropriate behaviors displayed during homework time.

Through an analysis of parent responses on the Homework Problems Checklist, Langberg et al. (2010) noted that homework problems increase as students advance through the grades at school. In addition, their analysis indicates that children diagnosed with Learning Disabilities and ADHD encounter significantly more problems with homework than children with ADHD alone. Moreover, their research replicated previous research findings demonstrating a high correlation between homework problems and ADHD inattentive symptoms. Boyer, Guerts, Prins, and Van der Oord (2015) found that students with ADHD frequently do not record assignments, lose materials, procrastinate, and are inefficient with completing assigned school work. All such behaviors are related

to EF skills.

Gureasko-Moore, DuPaul, and White (2007) examined the effects of self-management interventions on classroom preparation and homework behaviors for students with ADHD. The authors chose these areas following their review of research indicating that students with ADHD struggle with being adequately prepared for class and turning in assignments in a timely manner (i.e., EF skills). Their multiple-baseline design study included six middle school boys who were diagnosed with ADHD. Two of the participants were medicated to treat their ADHD symptoms. Gureasko-Moore et al. (2007) provided individualized instruction on self-management procedures following a baseline. The participants' daily performance on four classroom preparation behaviors and seven homework behaviors was collected from teachers and parents.

Over the course of the intervention, all participants showed positive improvements in their classroom preparation and homework behaviors as a result of their use of self-management strategies. Gureasko-Moore et al. (2007) report that at baseline all participants demonstrated less than 50% of the behaviors monitored for classroom preparation. Following the intervention, all participants rarely demonstrated less than 100% on these behaviors. Additionally, because four of the six participants were not medicated, Gureasko-Moore et al. (2007) concluded the interventions produced positive outcomes regardless of whether or not students were receiving medication.

Organizational, time management and planning (OTMP). Abikoff et al. (2013) compared the effectiveness of two behavior interventions targeting organization, time management, and planning (OTMP) on children with ADHD in third to fifth grade. The behavior interventions compared in their study were organizational skills training (OST)

and Parents and Teachers Helping Kids Organization (PATHKO). The implications of their study are pivotal given the lack of research on these skills at the elementary age when organization, time management, and planning problems typically begin. Abikoff et al. indicate that organization, time management, and planning difficulties are characteristic of ADHD. The authors hypothesize that organization, time management and planning problems may be an indicator of deficits in executive functioning and self-regulatory skills. If this relationship is true, they suggest implementing executive function interventions to address the deficits in OTMP. The authors, however, do note that controlled studies do not provide evidence that efforts to increase executive processes in children with ADHD improve their OTMP problems.

A second hypothesis Abikoff et al. (2013) propose is that the difficulties in OTMP children have are due to deficits in specific skills. These deficits in turn are evident when children with ADHD and OTMP problems cannot effectively organize materials, track work, manage time, or plan their work, which are also EF skills. Abikoff et al. (2013) go on to state that behavioral treatment emphasizing skills instruction, practice, and breaking skills into small components and teaching these to children will be helpful. A pilot study conducted by the authors to train third through fifth graders in organizational skills indicated significant improvement in organizational skills training.

A third hypothesis Abikoff et al. (2013) propose for OTMP difficulties in children are principally due to a performance deficit. A performance deficit indicates that the children possess the organizational skills to be successful but they fail to demonstrate these skills due to a lack of motivation, task avoidance, and/or a lack of carry through. The proposed solution to addressing OTMP problems due to a performance deficit is to

use interventions to increase motivation through rewarding target or goal behaviors that in turn increases how often the behaviors occur.

Abikoff et al. (2013) found that the effectiveness of the two interventions were largely comparable and that both skills-deficit and performance-deficit models may have relevance for children with ADHD and EF skill deficits. They further purport that future research could include components of both skills and performance-deficit models in interventions for children with ADHD.

Homework, Organization, and Planning Skills (HOPS) Intervention

The Homework, Organization, and Planning Skills (HOPS) intervention was piloted with an 8-week organization skills intervention for students with ADHD through an afterschool program (Langberg et al., 2008). This research was foundational in developing what is now known as the HOPS intervention. Prior to the intervention, the students (ages 9-14, in grades 4-7) all either met criteria for a research screening diagnosis of ADHD or were identified as struggling with homework completion or organization. Langberg et al. state that academic impairments in students with ADHD may be due to deficits in organization skills (e.g., lost assignments, poor planning). Their research study found that students significantly improved their organization and homework management skills, parents reported less homework problems, and teachers reported pre-post gains in academic impairment and GPA (Langberg et al., 2008). Langberg et al. conclude that the overall academic performance of students can be improved through targeted intervention in organizational skills and managing homework.

The impact of ADHD is noted in the school setting when students struggle with organization, time management, and planning (Langberg et al., 2011). These difficulties

in turn impact the grades that students earn and whether or not they pass on to the next grade or course. In middle school, these difficulties are prominent for many students as they transition to a new environment that typically includes larger classes, more teachers/classes in a school day, more independence, and more schoolwork. While researchers have developed various interventions to assist students with developing better organization and time management, the implementation of these interventions typically occurs in a clinic setting or the skills are embedded into a broader curriculum (Langberg et al., 2011).

Because organization, time management, and planning skills are critical for student success, Langberg et al. (2011) propose that a focused intervention targeting these skills in the setting where the difficulties occur most often is likely to improve access to care, intervention outcomes, and generalization of skills. Previous research on HOPS indicated significant improvements in academic grades in core academic classes, homework recording, accuracy, and parent ratings of homework problems for students receiving the HOPS intervention. Langberg et al. (2011) completed a study to modify, test, and refine the Homework, Organization, and Planning Skills (HOPS) intervention. In their previous research, HOPS was used as an intervention in an afterschool program. In the Langberg et al. (2011) study, school mental health (SMH) providers implemented the intervention in the school setting. SMH providers met with students for a total of 11 weeks. During the 11 weeks, students received two 20-minute intervention sessions a week for the first ten weeks, and then one 20-minute session per week for the last six sessions to allow students more opportunities to practice and problem-solve the HOPS self-management skills.

Materials organization, planning and time management skills were taught in the first ten sessions, and the subsequent sessions focused on working through difficulties the student was experiencing and self-monitoring to maintain the skills. The first two sessions also included gathering baseline data on the students' organization skills using the organization skills checklist that is part of the HOPS intervention program. In each following session the checklist is completed to note each student's mastery of skills. Students earn prizes based on the number of points they receive for mastery of the various organizational skills on the checklist.

The results of the Langberg et al. (2011) study were similar to those of the previous Langberg et al. (2008) study where gains were noted on the objective skills checklist, significant parent ratings, non-significant teacher ratings, and small increases in school grades. Langberg et al. (2011) note these findings are not surprising because many of the skills students learn through HOPS are more directly observed in the home setting by parents than by teachers in school. To address this, an addition was made to the HOPS intervention to include strategies for missing assignments as this aspect is easily observed by classroom teachers.

Langberg, Epstein, Becker, Girio-Herrera, and Vaughn (2012) evaluated the effectiveness of the refined HOPS intervention program when implemented during the school day by SMH providers to middle school students with ADHD. Langberg et al. (2012) indicate that research identifies a strong relationship between problems with organizational skills and academic impairment in children with ADHD. Furthermore, they claim that the relationship between performing academically and how students

manage homework materials persists even when controlling for variables like taking stimulant medication or receipt of school services.

In the 2012 study, Langberg et al. implemented the HOPS program for 11 weeks, with individual sessions occurring twice a week until session 11 when they met weekly. The SMH providers followed the HOPS intervention manual and an outside observer measured intervention fidelity. Langberg et al. (2012) found that when compared to a randomly assigned control group, the HOPS intervention participants exhibited significant improvements on parent ratings of problems with homework and organizational skills and on parent-rated organization and planning skills.

A second way HOPS intervention participants indicated success is by their significantly higher grade point averages (GPAs) in comparison to the control group. Not only were the GPAs higher during the intervention period, but Langberg et al. (2012) found that the GPAs of HOPS participants did not decline in the period following the HOPS intervention. Given that the SMH providers implemented the HOPS intervention with fidelity, Langberg et al. (2012) conclude that the HOPS intervention is feasible to implement during the school day without formal ongoing supervision or consultation.

Langberg, Becker, et al. (2013) examined the factors that predicted success with the HOPS intervention program. Langberg, Becker, et al. (2013) used the HOPS program with middle school students with ADHD and they found via parent ratings that the students made significant growth of materials organization and planning skills. From the student perspective, the therapeutic alliance and learning organizational skills from HOPS were the two mechanisms of change that were most impactful and they significantly predicted success in the post-intervention outcomes. Parents indicated that

the use of the binder system recommended by HOPS predicted growth in organization, planning, and homework more than the therapeutic alliance. Langberg, Becker, et al. (2013) identified a gap in the literature in regard to the effectiveness of HOPS with children without ADHD who have organization related academic impairments.

Langberg et al. (2018) propose that in order for a student to be successful with homework, the seven steps of the homework completion cycle must be implemented successfully. The HOPS intervention was intended to reinforce five of the seven steps in the homework completion cycle through support in organization and planning of homework (Langberg et al., 2018). The five steps of the homework completion cycle that HOPS supports include accurately recording assignments, taking home needed materials for homework, making plans to finish homework and study for exams, effective use of time after school, and returning materials and assignments to school. Three primary executive functioning skills are addressed through HOPS: planning/time management, management and organization of school materials, and accurate recording of homework in a planner.

Langberg et al. (2018) also used HOPS as a brief intervention, implemented during the school day in school settings by School Mental Health (SMH) providers without regular coaching or supervision. The HOPS intervention was implemented as prescribed with the exception of the total intervention being implemented in an 11-week period rather than a 16-week period. To accomplish this, SMH providers implemented the first 10 sessions of skills instruction twice weekly and the remaining six sessions of problem-solving, self-monitoring, and maintaining skills once a week. The participants who received the HOPS intervention showed moderate effect size improvements with

organization action and materials management behaviors per teacher report. HOPS participants also made significantly greater improvements over an alternative homework intervention, based on parent and teacher ratings, on use of organized actions. Langberg et al. (2018) conclude that brief, school-based interventions provided by mental health staff in schools can be effective.

Purpose of Current Study

EF skills are necessary for academic success in students, and the implications of EF deficits stretch across the lifespan. This review of literature has examined the impact of EF with a particular emphasis on those diagnosed with ADHD. Although ADHD is typically identified in childhood, it is not uncommon for symptoms to persist into adulthood. Children who have deficits in their executive functioning may experience challenges in a variety areas of life. The impact of EF deficits on the academic success of students is notable for difficulties completing assignments, turning in work, organizing materials, managing time, and planning to meet deadlines. Meltzer (2010) argues that more efficient executive function skills will help students with learning and/or attention difficulties bridge the gaps between their skills and the academic challenges they encounter in school.

Three of the 11 EF skills Dawson and Guare (2012) believe are most likely to influence social adjustment and academic performance also relate to the current study. Three of these skills include: planning/prioritization, organization, and time management. Planning and prioritization as defined by Dawson and Guare (2010, 2012) is an individual's ability to make a game plan to reach a goal or finish a task, including deciding what is and is not important to focus on. Organization is the ability to make and

keep systems for tracking materials and information. Dawson and Guare (2010, 2012) define time management as the competence to value time and to be able to estimate, allocate, and stay with in time limits and deadlines. The Homework, Organization, and Planning Skills (HOPS) intervention is designed to provide direct instruction in planning, organization, and time management and is therefore ideally designed to address these three executive skills in students (Langberg, 2011).

This literature review explored several interventions that have worked to mitigate the impacts of EF deficits and ADHD. Research has shown that targeted interventions to improve EF skills improves the academic achievement of students with ADHD (Langberg et al., 2008; Langberg et al., 2011). There is a gap in research on whether these same interventions are effective with other at-risk students. Many of the studies on targeted interventions for EF deficits and ADHD have focused on middle school or adolescent youth. There is a gap in research on the efficacy of targeted interventions for elementary students. Additionally, more research is needed to explore effective interventions in the school setting. Implementing supports where children and adolescents spend the most time may lead to more effective support for children struggling with EF deficits and ADHD.

The primary purpose of this study is to determine if a targeted, psychosocial intervention (HOPS) implemented by a SMH provider can decrease the EF deficits in elementary age children. This study will evaluate the effectiveness of the psychosocial intervention, Homework, Organization, and Planning Skills (HOPS), on elementary students with EF deficits. More specifically, this study proposes to further explore the impact of HOPS on the EF skills of organization, time management and planning in

elementary age children. It is hypothesized that as participants receive training and practice in their organization, planning, and time management skills, parent, teacher, and self-reports of EF deficits will decrease.

An additional perceived result of participating in the HOPS intervention is that the organizational, time management, and planning skills of participants will increase as measured by the Organizational Skills and Time Management Skills checklists. A third anticipated result of this study is that teacher reports of homework behavior difficulties will decrease and the application of homework, organization, and planning skills strategies will increase. An alternative hypothesis is that HOPS will have no effect on the deficits in EF skills for elementary school students.

Research Questions and Hypotheses

This study has the following two research questions and hypotheses:

1. What is the impact of the Homework, Organization, and Planning Skills (HOPS) program on EF ratings of elementary students? It is hypothesized that as participants receive training and practice in their organization, planning, and time management skills, parent, teacher, and self-reports of EF deficits will decrease as measured by the parent, teacher, and self-report BRIEF2 rating scales.

2. Is HOPS effective in increasing the organizational, time management, and planning skills of participants and in decreasing the teacher reports of homework behavior difficulties in elementary students? It is hypothesized that participating in the HOPS intervention will increase the homework, organizational, time management, and planning skills of participants as measured by the Organizational Skills and Time Management Skills checklists and weekly behavior report card.

Chapter III: Method

Participants and Setting

Participants for this study included three elementary students with a diagnosis of ADHD and/or executive functioning deficits as measured by the BRIEF2 parent and teacher rating scales. Participants were recruited from Shelby County Public Schools (SCPS) in Shelbyville, Kentucky. Participants for this study were elementary school students in the 5th grade. Demographic data including current diagnoses, medications, and treatment plans were reviewed and noted for each participant. Students who take medication were eligible for inclusion if they took their medications regularly, per parent report.

Students with significant hearing or vision impairments, severe language delays, psychosis, pervasive developmental disorders, or who received more than 120 minutes of special education services in a resource setting were excluded. Participants had to have a parent/guardian willing to participate in the two required parent meetings as part of the HOPS intervention. Parents and teachers completed consent forms and student participants completed an assent form. Participants were able to withdraw from the study at any time without consequence or penalty.

Three fifth grade students attending a public elementary school were referred for this study. All three met the aforementioned selection guidelines and were participants. To maintain confidentiality, the students will be referred to as Participant 1, Participant 2, and Participant 3. The first participant was a 10-year-old, biracial female attending a public elementary school. Participant 1 was diagnosed with ADHD and she took medication at home daily to treat this condition. Participant 1 received 30 minutes of

social skills instruction daily for her special education services as a student with an Other Health Impairment (OHI). Two teachers participated in the HOPS intervention for Participant 1, her classroom or regular education teacher and her special education teacher.

The second participant was a 5th grade, 10-year-old, Caucasian, male attending a public elementary school. Participant 2 was diagnosed with ADHD and he took medication at school and at home to treat this condition. Participant 2 received modifications and accommodations through a 504 Plan. Participant 3 was an 11-year-old, Caucasian, male in the 5th grade at a public elementary school. Participant 3 was diagnosed with ADHD and he took medication at home to treat this condition. Participant 3 withdrew his assent for participation in this research study prior to the conclusion of the study.

Measures

One independent variable for this study was the Homework, Organization and Planning Skills (HOPS) intervention program (Langberg, 2011). This study followed the HOPS treatment manual for implementation of the 16 one-on-one sessions with the participants, and the two parent sessions. The HOPS program explicitly teaches executive functioning skills of homework, organization, planning and time management and then reinforces the appropriate demonstration of these skills through a rewards menu. Initial data on the participant's organizational skills was established during the first two HOPS sessions, and a rewards menu was created to motivate the participant to improve their skills. The participant and researcher created the rewards menu options and the point value for each reward during the first HOPS session. This menu was updated during the

remaining HOPS sessions, and it was used as a template for the second parent meeting when a home-based rewards menu was created.

A dependent variable was the presence of impairments in executive functioning deficits as measured by the *Behavior Rating Inventory of Executive Function, Second Edition* (BRIEF2, Gioia, Isquith, Guy, & Kenworthy, 2015). The BRIEF2 manual describes the BRIEF2 as a rating scale that assesses the impairment of EF skills in children and adolescents ages 5 through 18 years in the home and school environments. Scores on the BRIEF2 are norm referenced T-scores with a mean of 50 and standard deviation of 10. For the current study, the BRIEF2 was given to one parent and at least one teacher for each participant. One participant that was over the age of 11 also completed a BRIEF2 Self-Report rating scale.

There are many scales and indices produced by the BRIEF2. This study focused on the composite scales to indicate the presence of impairments in executive functioning: Plan/Organize, Task Completion/Task-Monitor, Organization of Materials, and the overall Global Executive Composite. Task Completion (Self-Report only) measured how timely the student was with completing work and chores and Task-Monitor (Parent/Teacher only) measured if the student checked his/her work or assessed their performance during or after completing a task to decide if they met a desired outcome. Organization of Materials (Parent/Teacher only) evaluates if the student kept their areas and materials in an orderly manner. Plan/Organize looked at how well the student anticipated future events, set goals, developed appropriate steps ahead of time to complete a task, etc. (Gioia et al., 2015).

The BRIEF2 was used as the pre and post intervention measure used to note any changes in impairments following the HOPS interventions. The first edition of the BRIEF rating scales was described as a well-validated measure that researchers have repeatedly used to document the significance of executive function deficits for children with ADHD in comparison with their peers who do not have ADGD (Dawson & Guare, 2010). Internal consistency on the parent forms ranged from .76 to .97, and from .88 to .98 on the teacher forms. Interrater agreement between parents and adolescents and teacher and adolescent raters met or exceeded expectations from literature per Dodzik (2017). Test-retest reliability correlations for the parent BRIEF-2 ranged from .67 to .92, while on the teacher version it ranged from .76 to .89 and on the self-report version it ranged from .61 to .85 (Dodzik, 2017). In addition, Dodzik (2017) provided test-retest coefficients for the Global Executive Composite index score for the parent, teacher, and self-report form as .88, .90, and .85, respectively.

Three primary EF skills were addressed through HOPS: (a) management and organization of school materials, (b) planning/time management, and (c) accurate recording of homework in a planner. This study defined and investigated each of these three EF skills as a dependent variable. One dependent variable was organizational skills. As part of the HOPS intervention program, an Organizational Skills Checklist (Appendix A) was completed at each session to rate students' organizational skills for their binder (eight objectives), bookbag (five objectives), and locker/desk (four objectives). Each student was rated Yes or No for each objective, earning one point for every "yes." This checklist was also completed as a baseline measure prior to the first HOPS intervention session.

A second dependent variable was time management skills. The HOPS Time Management Skills Checklist (Appendix B) was completed one to two times during baseline and then again during each session starting in session 7 to rate the participant's use of time management skills in four areas: (a) test and quiz recording, (b) test and quiz studying, (c) long-term projects, and (d) evening schedule. Participants were awarded points in each category based on their performance of the skill per criteria. The participants could earn up to 22 points total during each HOPS session.

Another dependent variable was homework behaviors (i.e., accurately recording homework in a planner). The HOPS Homework Assignment Tracking Sheet (Appendix C) was completed during HOPS sessions 3 through 15 to monitor the participant's use of these skills related to their homework. In addition, a weekly behavior report card (Appendix D) was designed for the study to be completed by the classroom teacher based on the homework completion cycle (Langberg et al., 2018).

Procedure

Permission was obtained from the school district's superintendent and building level administrators. The Western Kentucky University's Institutional Review Board reviewed this project and gave its approval (see Appendix E).

The HOPS intervention manual recommends 16 sessions with the participants for the HOPS interventions, and two parent sessions with the participant and parent. Participants in this study received the interventions in adherence with the HOPS treatment manual. The first 12 sessions were delivered twice a week, and the last four sessions happened weekly. All sessions were delivered individually following the recommended script/format of the HOPS program regarding suggested content and

length. Appendix F includes an outline of the length, content and measures used with each HOPS session.

In general, each session lasted 20-25 minutes with the exception of the third session, which was longer given the amount of content. The first parent meeting for each participant was held after the fifth HOPS session, and the second parent meeting was held toward the end of the HOPS sessions (around session #13). Parents of Participant 1 and Participant 2 attended the first parent meeting. Participant 1's mother also attended the second parent meeting when the student shared the graphs from her HOPS interventions. Participant 2's mother was invited for the second parent meeting but she declined participation due to her work schedule. Although Participant 3 withdrew from the study prior to the first parent meeting, his mother was invited to meet with the researcher to review his HOPS interventions. Participant 3's mother declined the invitation for the HOPS parent meeting.

Prior to working with each participant on a regular basis, each participant met with the researcher to learn about HOPS and give signed assent for their participation. The researcher then proceeded to collect three to five baseline data points for each participant's organizational skills as measured by the organizational skills checklist. The HOPS manual divides the sessions as follows: sessions 1-2 are initial treatment and introduction of program and concepts, sessions 3-11 are the training phase, sessions 12-15 are maintenance, and session 16 is a reflection and celebration.

This study used a multiple baseline across participants single subject research design. The interventions were implemented concurrently. Fifth grade teachers and school support staff recommended participants for this research study. An email was sent

to each teacher to explain the research study and request potential participants for the study. An informational letter was sent home to the nominated students, and the researcher called each parent to discuss the letter and answer questions about HOPS. Consent and assent forms were signed and baseline data was collected for all participants. The HOPS intervention began once three consistent baseline data points or five variable baseline data points were gathered per participant.

Chapter IV: Results

The Homework, Organization, and Planning Skills (HOPS) program was primarily designed and tested on middle and high school students (Langberg et al., 2008). This study explores the impact of the HOPS program on elementary students through two research questions. The first research question sought to determine the program's impact on the students' executive functioning (EF) skills, as measured by the BRIEF2 (Gioia et al., 2015). It was hypothesized that as participants receive training and practice in their organization, planning, and time management skills, EF deficits will decrease as measured by the parent, teacher, and self-report BRIEF2 rating scales (lower scores on the BRIEF2 indicate better EF skills).

The second research question investigated the effectiveness of the HOPS interventions in increasing the organizational, time management, and planning skills of three participants. Each of these EF skills were taught and monitored over the course of the intervention. It was hypothesized that through participating in the HOPS program, participants' skills with homework, organizational, time management, and planning skills will increase over the course of the intervention.

Executive Functioning

The dependent variable of EF was assessed with scores from three components of EF (i.e., Plan/Organize, Task-Monitor, Organization of Materials), as well as the overall Global Executive Composite (GEC) score from the BRIEF2. Scores on the BRIEF2 are reported as T-scores with a mean of 50 and a standard deviation of 10. For all BRIEF2 scales, T-scores from 60 to 64 are considered mildly elevated, 65 to 69 are considered potentially clinically elevated, and T-scores at or above 70 are considered clinically

elevated (Gioia et al., 2015). Figures on the following pages include the specific results for each participant as measured by their parents and teachers. Participant 3 is the only participant who was old enough to complete the BRIEF2 self-report form. As such, only self-report scores are presented for Participant 3.

Parent ratings. Figure 1 presents the parents' pre- and post-intervention ratings for all three participants. A visual analysis of Figure 1 indicates that the scores for Participant 1 and Participant 3 decreased in all areas on the BRIEF2 rating scales, indicating improvements in those EF skills. Parent ratings for Participant 2 indicate that his EF difficulties declined in three out of four areas. Collectively, all three participants had the hypothesized decrease in their overall GEC, as well as decreases in the Planning/Organization and Organization of Materials sections.

Teacher ratings. Teachers' pre- and post-BRIEF2 ratings are presented in Figure 2. The fall assessment was in October and the spring assessment was in May. Participant 1 had two teachers who provided ratings on her EF strengths and weaknesses. Her general education teacher indicated that Participant 1's EF skills, as measured by the Teacher BRIEF2, remained essentially the same in the planning and organizing area and with the overall GEC. Participant 1's scores decreased (i.e., showed improvement) in monitoring tasks and organization of materials. Participant 1 has a special education teacher who works with her predominantly in a resource or special education classroom separate from her typical peers. According to the special education teacher's BRIEF2 ratings, Participant 1's EF difficulties increased on the post-ratings in all areas.

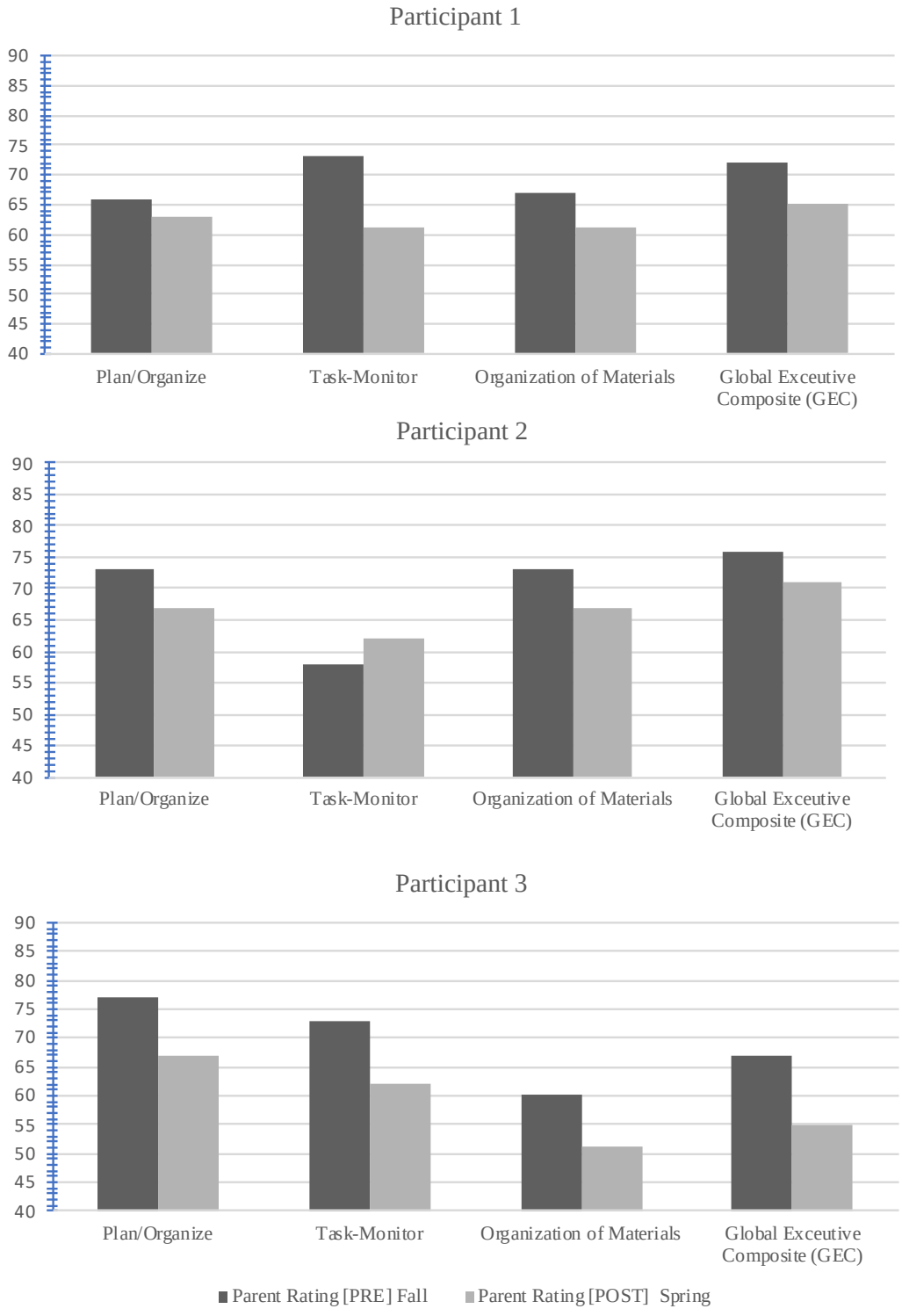

Figure 1. Parents' pre and post BRIEF2 executive functioning ratings.

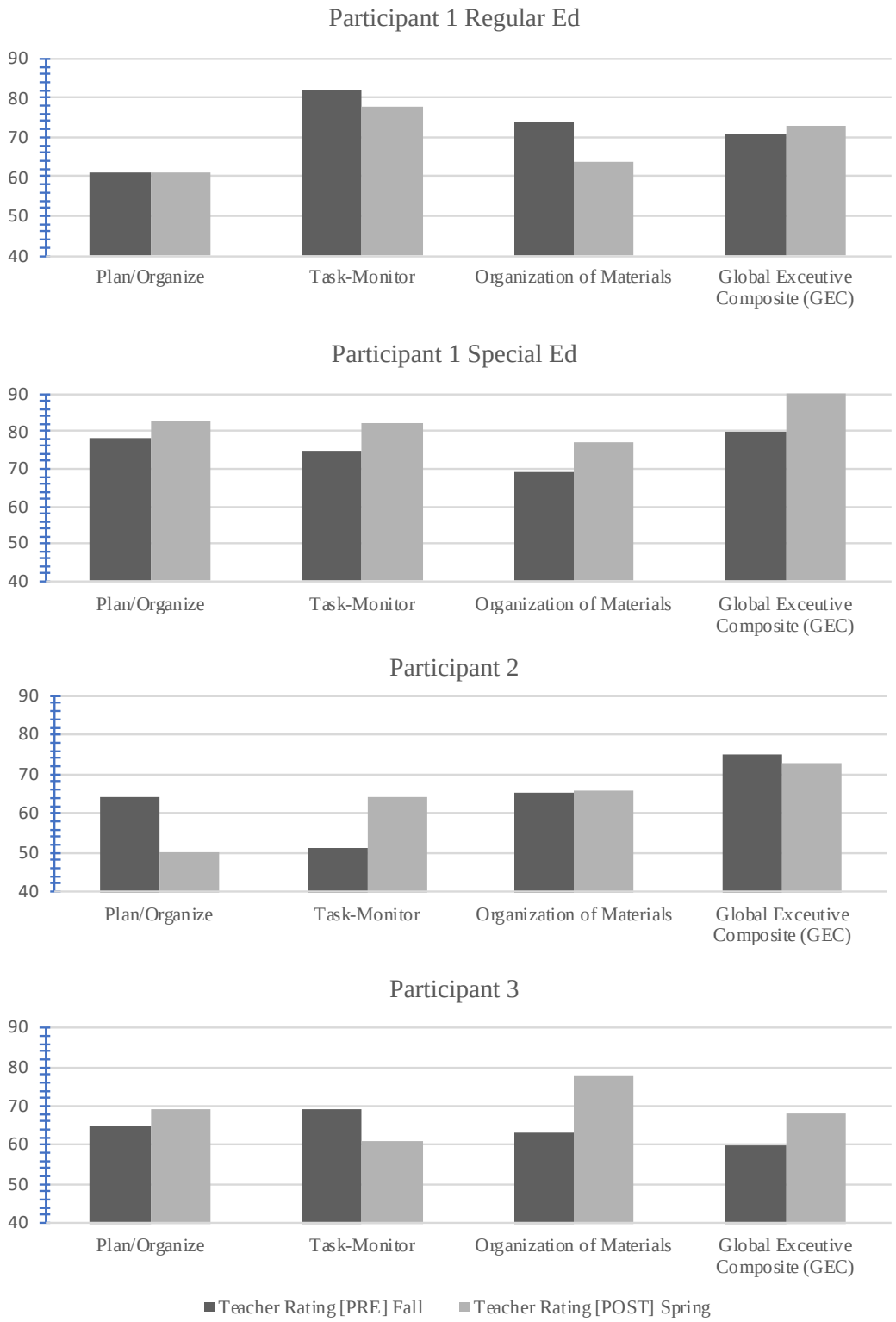

Figure 2. Teachers' pre and post BRIEF2 executive functioning ratings.

A visual analysis of the pre- and post-teacher BRIEF2 rating scales for Participant 2 indicates that he showed a decrease in only the planning and organizing area. Two areas, organization and GEC, received essentially the same ratings at pre- and post-intervention. Participant 2's teacher reports an increase in EF difficulties in monitoring tasks. According to teacher BRIEF2 pre- and post-ratings for Participant 3, he only made progress in his EF skills of monitoring tasks. In the other three areas, Participant 3 received higher scores at the post-assessment, indicating more EF difficulties. Additionally, it is noted that per teacher ratings, Participant 3's difficulties with organizing materials increased substantially, from a T-score of 63 in the mildly elevated range to a score of 78 in the clinically elevated range.

Self-report ratings. Participant 3 completed the BRIEF2 self-report rating scales in November 2018 and April 2019 as a pre- and post-measure (see Figure 3). The other participants did not complete this self-report rating scale because of their young age. As previously mentioned, Participant 3 did not complete the HOPS interventions. Despite this, he did report a slight decrease in the difficulties he experiences with monitoring and completing tasks. Participant 3 also reported a decrease on his overall GEC.

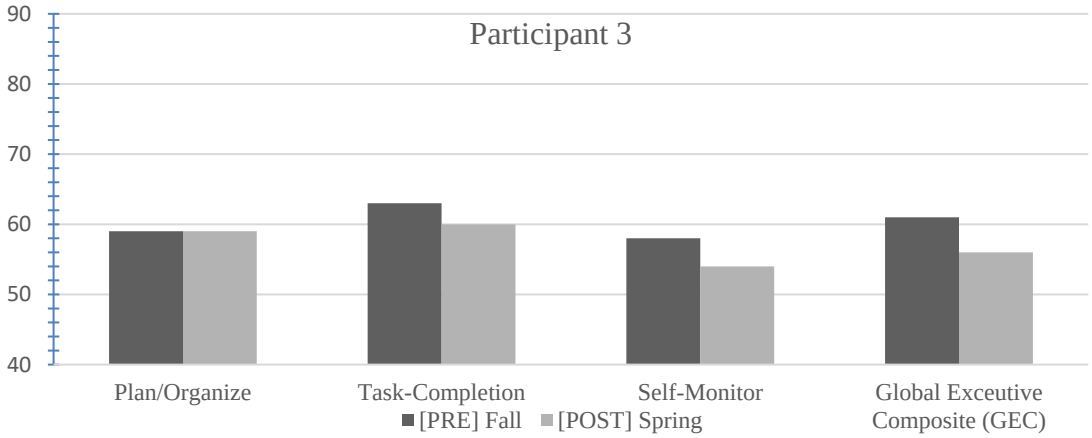

Figure 3. Participant 3's self-report BRIEF2 executive functioning skills.

In summary, the results for the impact of HOPS on EF indicate that all parents reported decreases in most areas as measured by the BRIEF2. A review of the significance in changes between pre and post BRIEF2 scores indicates that although there were decreases in the BRIEF2 scores, the decreases are not necessarily statistically significant. Table 1 summarizes the self-report and parent pre and post BRIEF2 scores while Table 2 contains the teachers' ratings. Participant 2's parent and Participant 3's self-report ratings do not indicate significant results. Participant 3's parent ratings indicate a statistically significant decreases in the overall composite, and in the Plan/Organize and Organization scales. Additionally, Participant 1's parent rating indicates a statistically significant decrease in the Task Monitor scale.

Table 2 includes a summary of the significance between the teacher pre and post BRIEF2 ratings. In general, the teacher results were less consistent indicating some areas where scores for participants actually increased, indicating greater skill deficits, and only a couple areas where the scores decreased on the BRIEF2, indicating an improvement in skills. Participant 1's regular education teacher reported a statistically significant decrease on the Organization scale, but no other scales. Participant 1's special education teacher reports statistically significant increases on the Organization and overall Composite scales. Participant 2's teacher reports a statistically significant decrease on the Plan/Organize scale but a statistically significant increase on the Task Monitor scale. Participant 3's teacher reports statistically significance increases on the Organization and overall Composite scales.

Table 1

Summary and Significance of Changes in Parents' and Self-Report BRIEF2 Scores

Rater	Pre	Post	Change Score	Reliable by Significance Level	
				.10	.05
Parent #1					
Plan/Organize	66	63	3	No	No
Task Monitor	73	61	12	Yes	Yes
Organization	67	61	6	No	No
Composite	72	65	7	Yes	No
Parent #2					
Plan/Organize	73	67	6	No	No
Task Monitor	58	62	4	No	No
Organization	73	67	6	No	No
Composite	76	71	5	No	No
Parent #3					
Plan/Organize	77	67	10	Yes	Yes
Task Monitor	73	62	9	No	No
Organization	60	51	9	Yes	Yes
Composite	67	55	12	Yes	Yes
Self-Report #3					
Plan/Organize	59	59	0	No	No
Task Monitor	63	60	3	No	No
Organization	59	59	0	No	No
Composite	61	56	5	No	No

Note. Significance level based on reliable change scores listed in Table G.1 and Table G.3 of the BRIEF2 manual (Gioia et al., 2015).

Table 2

Summary and Significance of Changes in Teachers' BRIEF2 Scores

Rater	Pre	Post	Change Score	Reliable by Significance Level	
				.10	.05
Regular Education #1					
Plan/Organize	61	61	0	No	No
Task Monitor	82	78	4	No	No
Organization	74	64	10	Yes	Yes
Composite	71	73	2	No	No
Special Education #1					
Plan/Organize	78	83	5	No	No
Task Monitor	75	82	7	No	No
Organization	69	77	8	Yes	No
Composite	80	90	10	Yes	Yes
Teacher #2					
Plan/Organize	64	50	14	Yes	Yes
Task Monitor	51	64	13	Yes	Yes
Organization	65	66	1	No	No
Composite	75	73	2	No	No
Teacher #3					
Plan/Organize	65	69	4	No	No
Task Monitor	69	61	8	No	No
Organization	63	78	15	Yes	Yes
Composite	60	68	8	Yes	Yes

Note. Significance level based on reliable change scores listed in Table G.2 of the BRIEF2 manual (Gioia et al., 2015).

Organizational, Time Management, and Planning Skills

The second research question of this study investigated the effectiveness of the HOPS interventions in increasing specific organizational, time management, and planning skills of the three participants. Each of these skills were taught and monitored over the course of the intervention by the HOPS Organizational Skills Checklist (see Appendix A) prior to the implementation of the program (i.e., baseline) and at the start of each intervention session. The figures on the following pages illustrate the results indicating the effectiveness of HOPS at increasing the organizational, time management, and planning skills for each participant.

Organizational skills were assessed by monitoring participants' skills in organizing their binder, bookbag, desk, and locker. Their organization of each was graphed separately and are presented in Figures 4 – 7. Time management and planning skills were monitored with the Time Management Skills Checklist (see Appendix B) to note whether or not the participant recorded their upcoming test or quizzes, study time, or long-term projects in their planner. Students received points based on the level of detail they used with each of these items. In addition, student's time management and planning skills were monitored through the use of an evening planning schedule that allotted specific amounts of study time for completing specific homework activities.

Binder. Figure 4 provides graphs of all participants' organizational skills related to their binder. The Organizational Skills Checklist includes seven criteria for how the participant should organize their binder. The participant receives a point for each criterion met with their binder organization. The percentage of criteria points was recorded at baseline and during intervention sessions on the graphs in Figure 4.

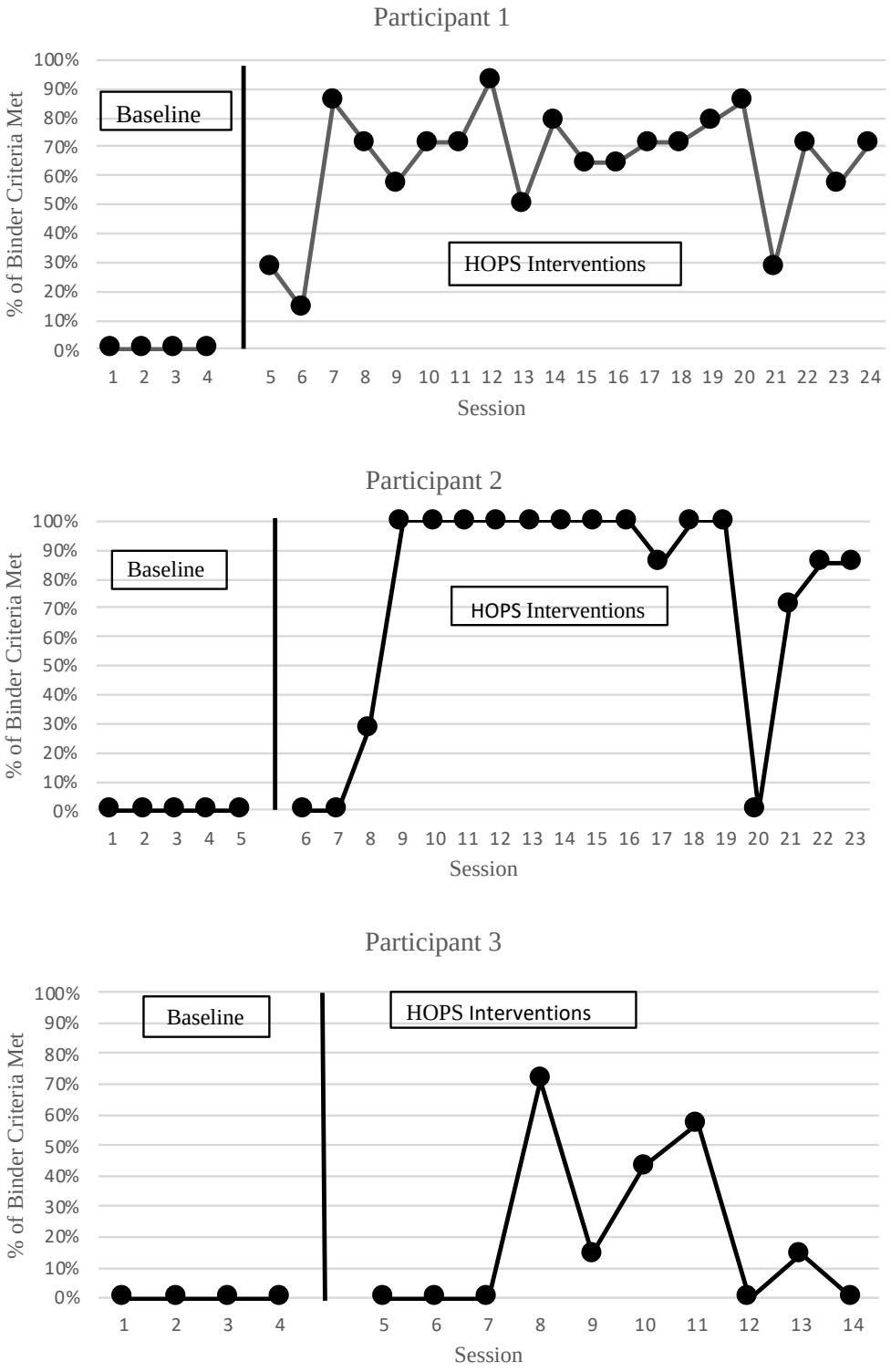

Figure 4. HOPS organizational skills: Binder.

All three participants met none of the organizational criteria during baseline, so their average was 0%. A visual analysis of Figure 4 reveals that binder organizational skills increased for all participants. Participant 1's average binder criterion percentage over the course of HOPS intervention was 64%, with a median rating of 71%, which are considerably higher than baseline. articipant 2 showed the greatest amount of increase with a HOPS treatment average of 75% and a median performance of 100%. Participant 3, who opted out of the intervention early, had performance ranging from 0-57%, but the treatment average was only 20% and the median performance was 0%, which is the same as baseline.

Bookbag. Participants' organizational skills with their bookbag were also assessed and results are presented in Figure 5. The Organizational Skills Checklist includes four criteria for how each participant should organize their bookbag. The participant receives a point each time they meet a criterion with their bookbag organization. The percentage of criteria points were recorded at baseline and during each HOPS intervention session on the graphs in Figure 5.

Overall, only Participant 1 had a positive, upward trend during the intervention phase. Participant 1's increase beween the average performance at baseline and during treatment was 20 percentage points. Similarly, Participant 1's median score during baseline was 25% and during the intervention phase the median score was 50%. Participant 2 experienced the greatest increase between baseline and treatment means with a 49 percentage point increase in the average performance. Similarly, Participant 2's median score at baseline was 25% and it was 75% for treatment indicating a 50 percentage point increase during the HOPS interventions. Participants 1 and 2 also

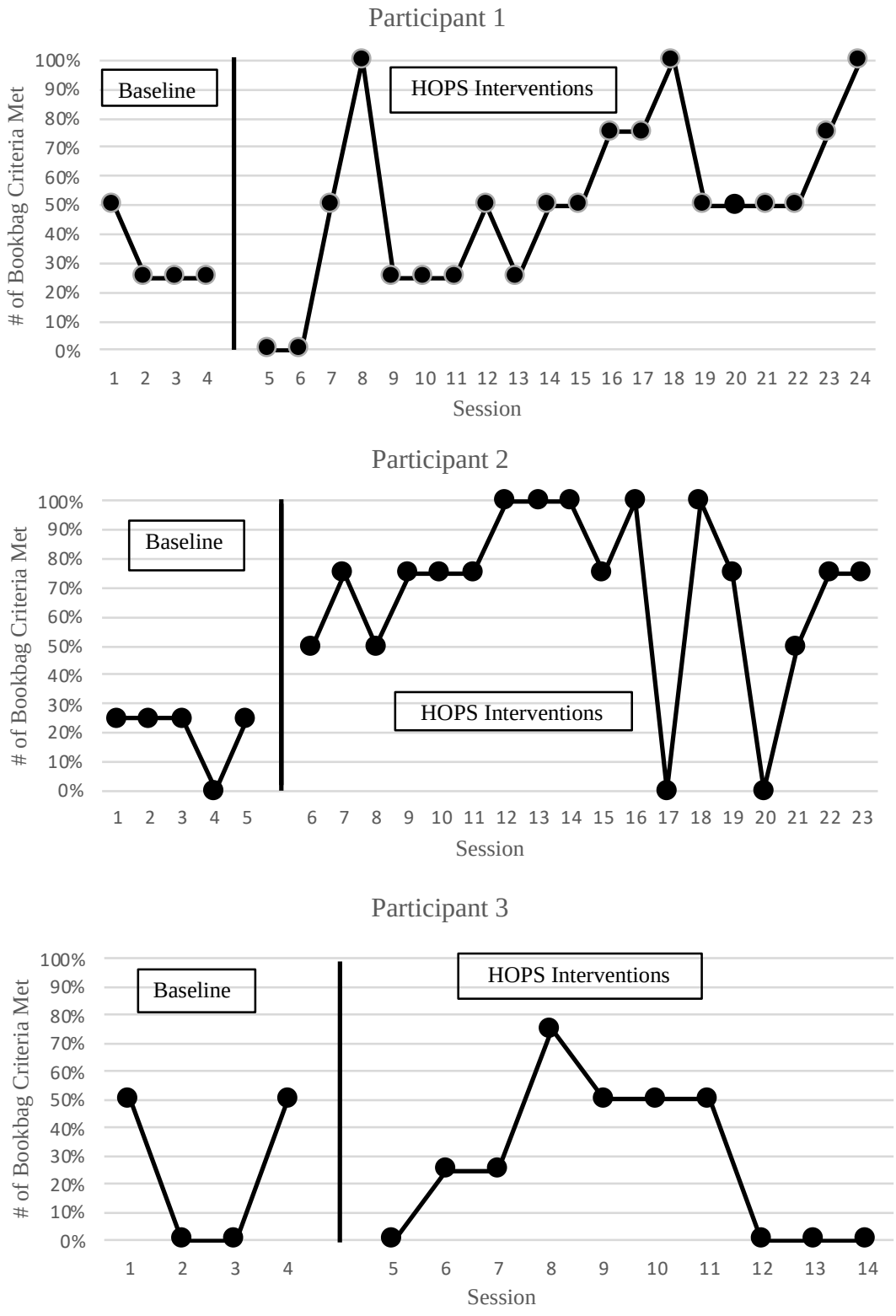

Figure 5. HOPS organizational skills: Bookbag.

experienced the greatest range (0-100%) in performance during the intervention phase. While Participant 1's ratings of 0% came during the first two sessions of the intervention phase, Participant 2 had two sessions of 0% near the end of the intervention sessions, suggesting a lack of maintenance of skills.

Participant 3's range of performance spanned from 0-75% and only demonstrated a 3 percentage point increase in the average of bookbag organizational skills between baseline and intervention phases. Furthermore, Participant 3's last three sessions were at 0%. Such results indicate no improvement with bookbag organizational skills.

Desk. The Organizational Skills Checklist includes three criteria for how the participant should organize their locker or desk. The participants' organization of their desks and lockers were assessed separately using the same criteria. The participant receives a point each time they met a criterion with their desk organization and with their locker organization. The percentage of criteria points for desk organization is presented on the graphs in Figure 6 and locker organization is presented on the graphs in Figure 7.

As can be seen in Figure 6, Participant 1 and Participant 2's organizational skills with their desk increased over the course of the HOPS intervention. Participant 1 increased from an average of 17% during baseline to an average of 62% during the treatment phase with a positive, upward trend in the data. The mean difference is a 45 percentage point increase between baseline and intervention phases. While Participant 2 also showed an increase in the organizational skills for his desk, his mean rate of improvement was only 13 percentage points between the baseline average of 27% and the treatment average of 40%. Furthermore, Participant 2's last seven sessions only received scores of 0% or 33%, indicating a drop in the consistency of desk organization at the end

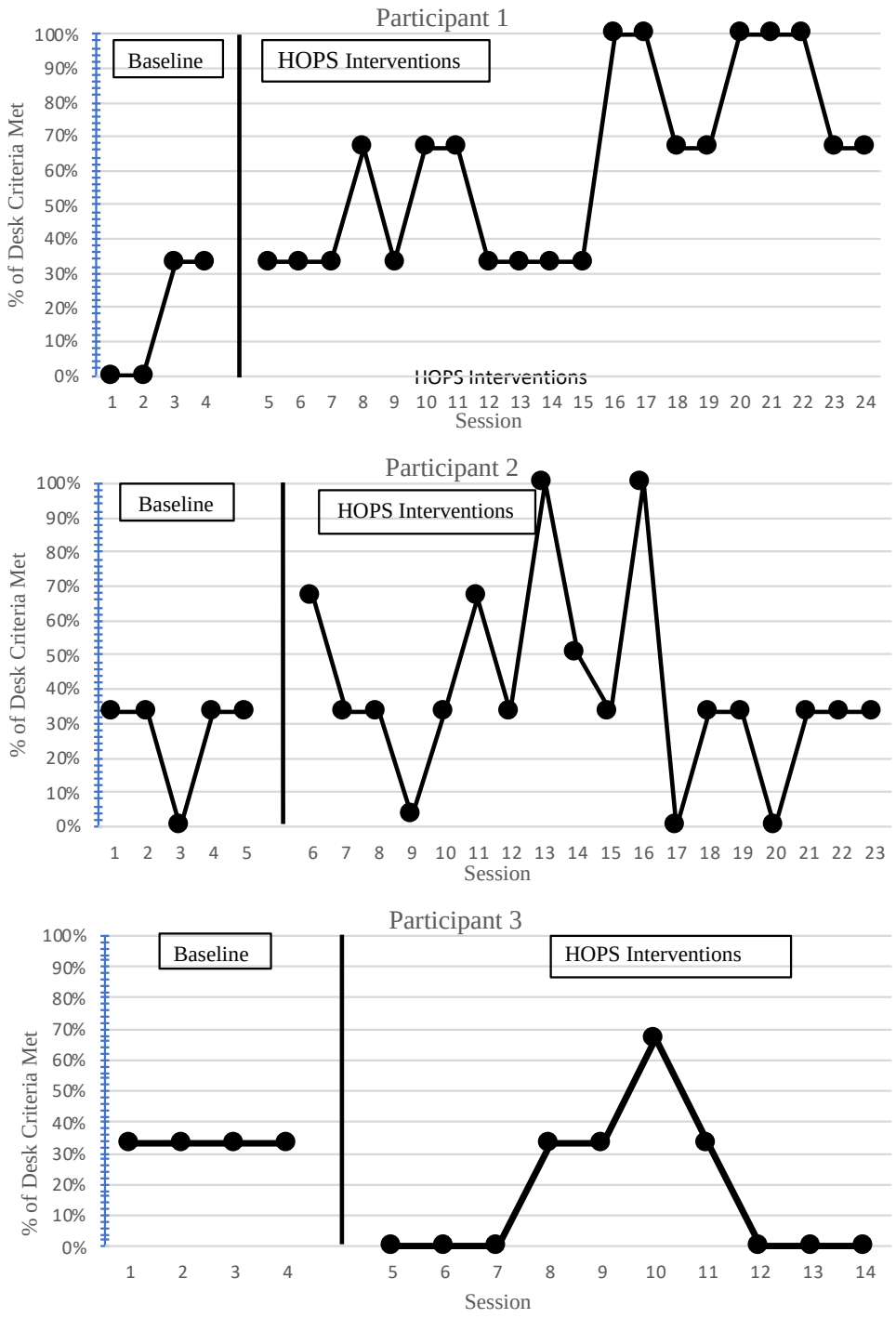

Figure 6. HOPS organizational skills: Desk.

of the intervention phase. Also noteworthy is the fact that the median performance for Participant 2 was 33% of organizational desk skills during both baseline and treatment phases.

Participant 3 consistently met 33% of the desk criteria during baseline. He only met or exceeded this rating four times during the 10 HOPS intervention sessions he completed. During the intervention phase, his mean level was 17% and his median level was 0%. As such, Participant 3 actually demonstrated a decrease in his desk organizational skills as measured by the HOPS desk criteria.

Locker. A visual analysis of Figure 7 provides input on how two participants responded to the HOPS interventions when required to apply their organizational skills to their lockers. The same three criteria used for the students' desks were applied to their lockers. Participant 3 did not have a locker, so he does not have any monitoring data for this measure.

During baseline, Participant 1 had a mean score of 0% and Participant 2 had a mean score of 7%, with both participants having a median score of 0%. Such scores indicated few to none organizational skills with their lockers prior to the intervention. Both students demonstrated an increase in their average and their median performance during the intervention phase. Although Participant 2 had a slightly higher average score (43%) during treatment than Participant 1 (30%), Participant 1 was more consistent with demonstrating the locker organization skills than Participant 2 over the course of the HOPS intervention sessions. After four intervention sessions, Participant 2's scores were at 100% for four out of five of the next intervention sessions. However, Participant 2's scores decreased after that and were at inconsistent levels.

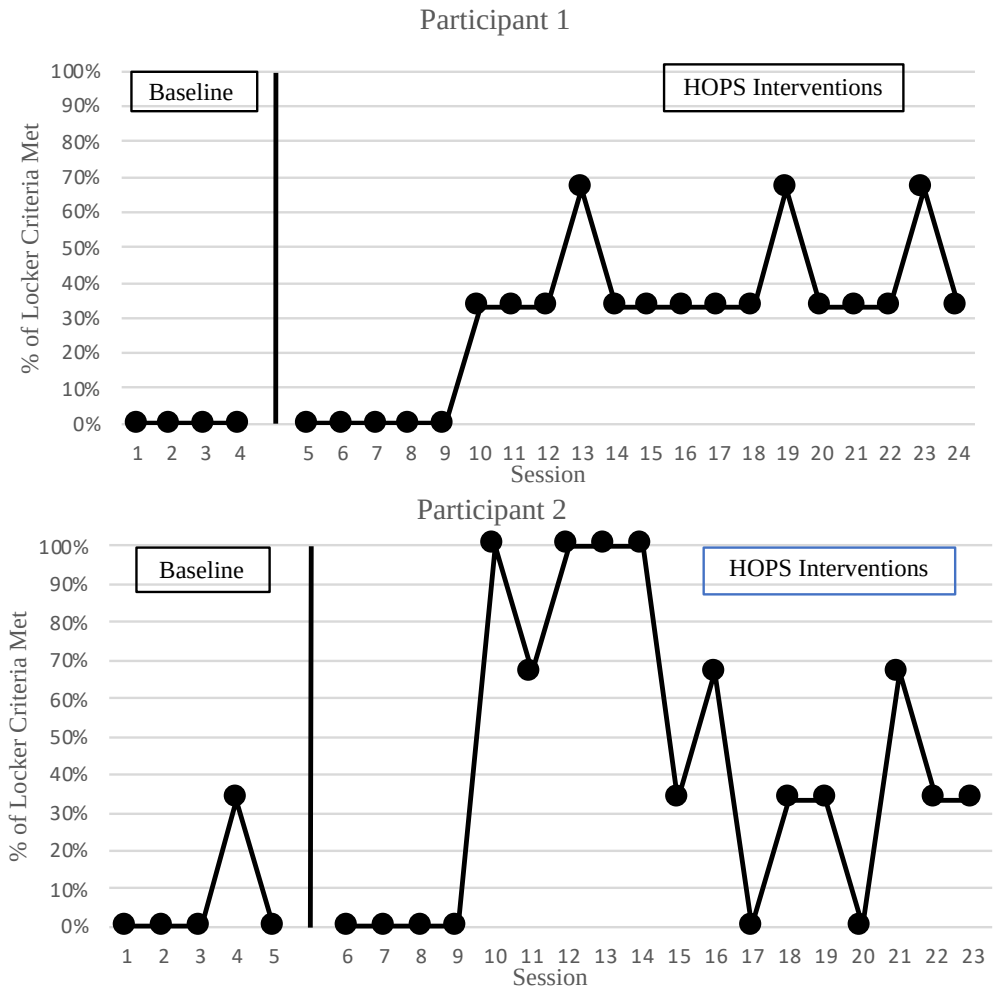

Figure 7. HOPS organizational skills: Locker.

Homework accuracy. HOPS participants were taught how to write down their homework and have their teacher initial for accuracy using a Homework Assignment Tracking Sheet (Appendix C). Participants met the criteria anytime their teacher initialed their homework tracking sheet even when the student indicated they did not have any homework. The participants received one point for each teacher initial. The homeowrk tracking sheet was introduced during the fourth one-on-one session and was monitored unitl the end of the HOPS interventions. Time management and planning skills were also monitored with this tool. Once the participants received instruction in time management

skills, the homework tracking sheet also monitored whether or not each participant raccurately recorded their upcoming exams, long term projects, and plans to prepare for these.

Figure 8 indicates the results of how well each participant demonstrated their HOPS homework organizational skills using the Homework Assignment Tracking Sheet. All participants received 0 points each time at baseline, indicating they did not have any teacher's initials for correctly recording their homework assignments. During the intervention phase, the median score for all participants remained at 0, although the mean score for Participant 1 was 1.0 and the mean score for Participant 2 was 1.75. Although Participant 2 had a higher treatment average, it is noteworthy that he received zero points for 9 of the last 10 HOPS intervention sessions, indicating a lack of skill development. Participant 3 did not improve his homework planning skills over the course of the HOPS interventions. During the baseline phase and for the six HOPS intervention sessions, Participant 3 did not obtain his teacher's initials to verify that he wrote down his homework correctly.

Time management. Several time mamangement skills were gradually introducted during the final phase of the HOPS interventions. The HOPS time management and planning skills were assessed using the Time Management Skills Checklist (Appendix B). These skills included recording an upcoming test or quiz in general or specific terms, designating a specific day, time, and method of study for an upcoming test, recording an upcoming project to complete with specific tasks, a specific day, and deadlines for each.

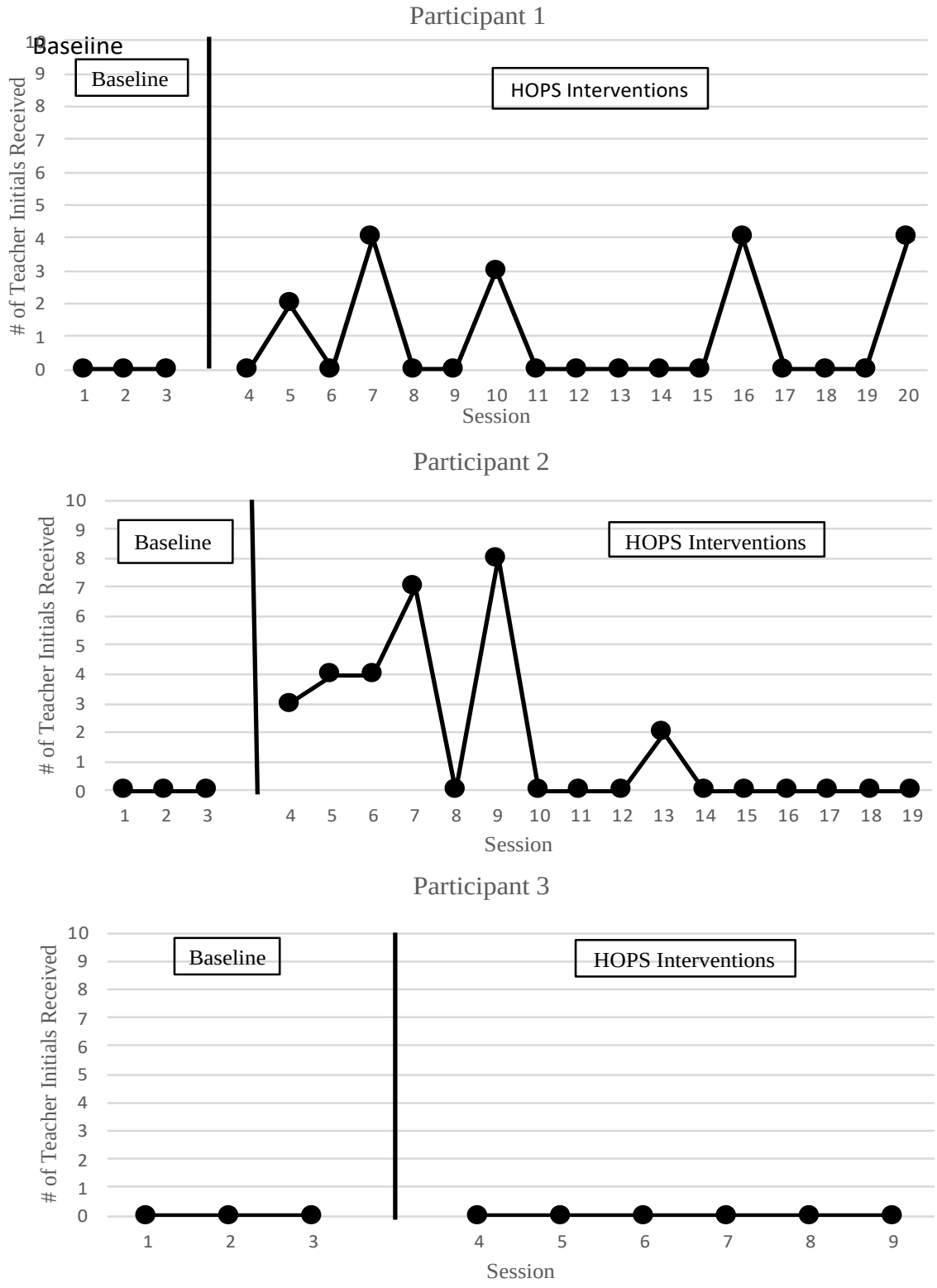

Figure 8. Homework assignment tracking from teacher initials.

The students were able to receive time management points for creating an evening schedule each night including a specific amount of study/homework time and specific activities to be completed. Students received points based on the level of detail they used with each of these items. The following point values were possible for time management skills: 2-3 points for test and quiz recording, 4-7 points for test and quiz studying and long-term projects, and 3-5 points for the evening schedule. The percentage of time management points were recorded at baseline and during each HOPS intervention session on the graphs in Figure 9.

All participants received a score of 0 points at the one baseline session, and Participants 2 and 3 remained at 0 points over the course of the HOPS intervention phase. Participant 1 demonstrated a similar pattern but did earn 20% of the time management points on one occasion. Overall, none of the participant learned skills to plan in advance to study for tests or quizzes, plan studying for long term projects, record upcoming tests/quizzes, or create an evening schedule.

Homework behavior report cards. The effectiveness of the HOPS interventions for decreasing teacher reports of homework behavior difficulties as measured by weekly teacher behavior report cards was also explored. The teachers provided feedback on how well each student demonstrated homework behaviors over the course of the HOPS interventions. The specific behaviors consisted of the participant recording homework assignments accurately, returning materials and assigments to school on time, and if the participants completed homework as requested. Only one baseline data point was obtained for Participant 1 and 2.

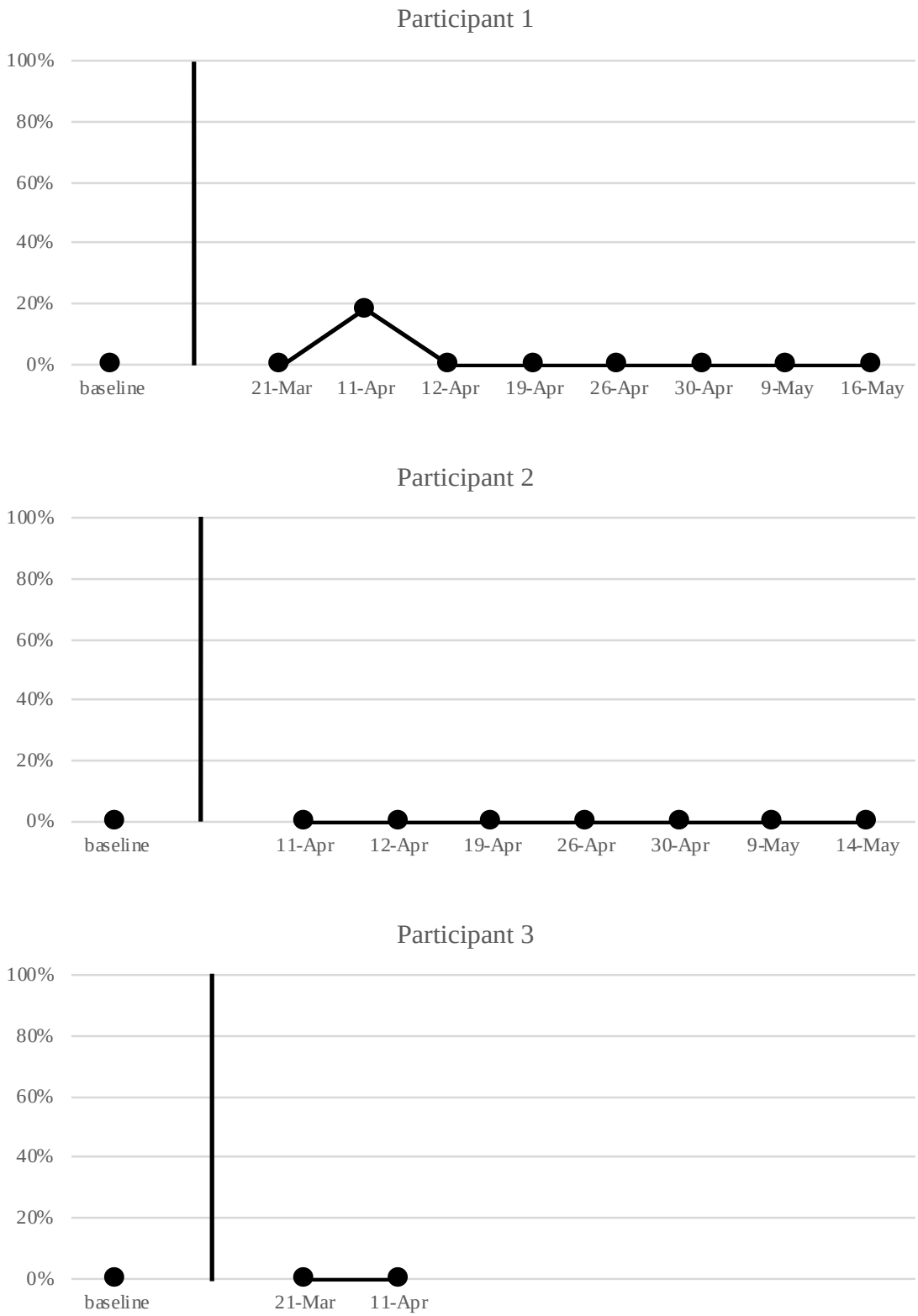

Figure 9. Time management points earned.

The results of the weekly behavior report cards are presented in Figure 10. Both of Participant 1's teachers completed the weekly behavior report cards. In comparison to the baseline data point, the average percentage of HOPS homework behaviors did not increase for either teacher. Participant 1's classroom teacher reported 22% at baseline and a mean level of 18% during the intervention phase. Participant 1's special education teacher indicated 44% at baseline and 33% during the intervention phase. Participant 2 demonstrated little change from the baseline rate of 22% to the treatment average of 28%. Despite not completing the study, Participant 3 demonstrated the most improvement in this area growing from an average of 37% of the homework behaviors at baseline to 56% during the intervention phase.

Summary

The HOPS organizational, time management, and planning skills were documented for the second research question of this study. There were four areas of organizational skills that were measured. Participants demonstrated more success with demonstrating organizational skills with their binders than with their bookbags, lockers, or desks. Participants did not consistently demonstrate the use of time management and planning skills. Participants demonstrated more of the HOPS organizational skills with recording homework assignments than they did with time management skills. Additionally, only one out of four teachers report an increase in positive homework behaviors over the course of the HOPS interventions.

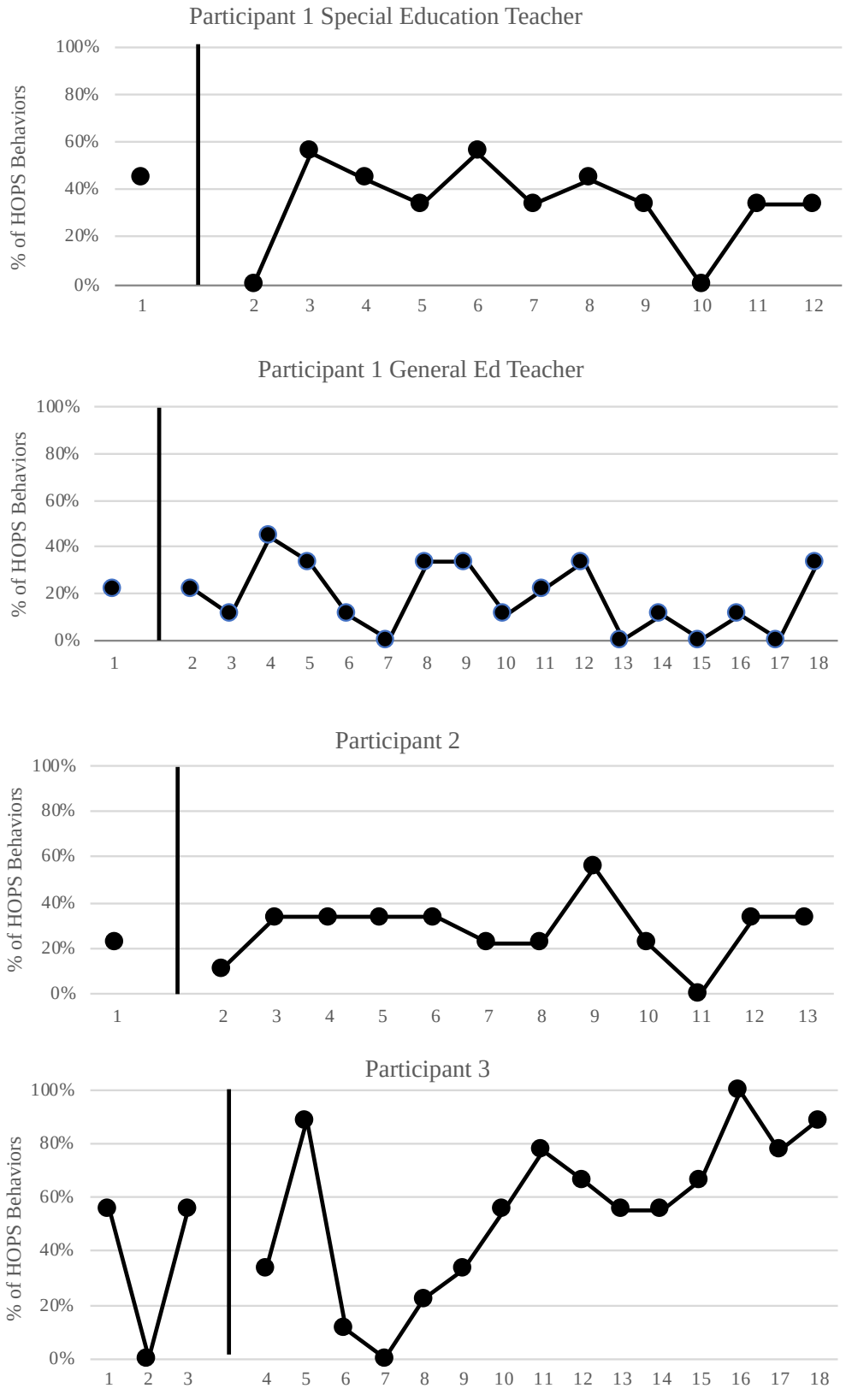

Figure 10. Teacher weekly behavior report cards.

Chapter V: Discussion

Extensive research indicates that children and adolescents with ADHD frequently encounter academic impairments and they are at greater risk for retention and dropping out of school than their peers (Langberg, Becker, et al., 2013). Moreover, they propose that for youth with ADHD, EF is a mitigating factor in the pathway between academic impairment and ADHD symptoms. Regardless of the breadth and depth of psychosocial interventions designed to improve ADHD concerns and EF skill deficits, research indicates that implementing these interventions in school where students are faced with EF problems is crucial (Meltzer, 2010; Pfiffner et al., 2013; Wehmeier et al., 2010). Furthermore, Gureasko-Moore et al. (2007) concluded that for students with ADHD, "self-management of classroom and homework preparation behaviors produced positive outcomes across participants regardless of whether they were also receiving medication" (p. 661).

Research has shown that targeted interventions to improve EF skills improve the academic achievement of students with ADHD (Langberg et al., 2008; Langberg et al., 2011). More specifically, Langberg, Becker, et al. (2013) used the HOPS program with middle school students with ADHD and found via parent ratings that the students made significant growth with organization of materials and with planning skills. The Homework, Organization, and Planning Skills (HOPS) intervention is designed to provide direct instruction in planning, organization, and time management and is therefore ideally designed to address these three executive skills in students in middle and high school (Langberg, 2011). Despite this, a gap in research exists on whether these same interventions are effective with other ages of students. Many of the studies on

targeted interventions for EF deficits and ADHD have focused on middle school or adolescent youth. The goal of this study was to contribute to the gap in research on the efficacy of targeted interventions for elementary students.

The primary purpose of this study was to determine if a targeted, psychosocial intervention (HOPS) implemented by a school mental health provider could decrease organization, time management and planning deficits in elementary age children with ADHD. Two of the three participants completed the HOPS interventions as prescribed by the program treatment manual. It was hypothesized that as participants received training and practice in their organization, planning, and time management skills, parent, teacher, and self-reports of EF deficits would decrease.

Parent, teacher, and child self-report BRIEF2 rating scales were used as a broad measure of the impact of the HOPS intervention program. An analysis of results suggests that although the HOPS program was found to be effective in decreasing EF difficulties in some areas, the impact was inconsistent across participants and raters. Of the parent ratings, there were no significant differences in pre- and post-intervention scores for one participant, a significant improvement in only one area (i.e., Task Monitor) for another participant, and significant improvements in three of the four areas for the third participant. Teacher BRIEF2 ratings reveal a statistically significant change in at least one area for each participant. Unfortunately, most of those statistically significant changes (i.e., five of the seven) were in the opposite direction than hypothesized indicating more EF difficulties at the end of treatment in comparison to the pre-intervention assessment.

The BRIEF-2 results show that the HOPS interventions were generally ineffective to decrease the EF skill deficits in elementary age participants with ADHD. The ratings on the BRIEF-2 do not demonstrate a consistent decrease in EF deficits across all raters. The teacher ratings go in the opposite direction, indicating more EF difficulties after HOPS than at the beginning. One possible reason for these results is that the BRIEF2 may not be a good measure for the skills taught through the HOPS interventions. As a behavior rating scale, the BRIEF2 is a broad measure of EF skills that may not line up with the explicit EF skills targeted through HOPS.

A second limitation of behavior rating scales in general is that they do not measure actual behaviors. Instead, behavior rating scales measure the impression or perceptions that the respondent has of the child's behaviors (Whitcomb & Merrell, 2013). Rating scales are one person's view of the behaviors of concern, rather than an actual measure of behaviors in the natural context. Therefore, while in theory the BRIEF2 is measuring EF skills, it is an indirect measure of the actual effects of the HOPS interventions.

Time is yet another limitation or barrier when using behavior rating scales like the BRIEF2. The time element impacts scores on a behavior rating scale because recent events and behaviors are often given disproportionate weight when the scale is completed (Whitcomb & Merrell, 2013). Given this, it is possible that when the teachers responded to the BRIEF2 in May, they had specific incidents in mind that the participants struggled with recently or the teachers focused on recent problem behaviors that skewed the results. There is anecdotal evidence for this possibility for Participant 2 who had several

behavioral difficulties in the larger school environment just before the post BRIEF-2 rating scales were completed.

An additional perceived result of participating in the HOPS intervention was that the organizational, time management, and planning skills of participants would increase when measured directly, specifically by the Organizational Skills and Time Management Skills checklists provided in the HOPS manual. The second research question of this study explored whether or not HOPS was effective in increasing the organizational, time management, and planning skills of participants and in decreasing the teacher reports of homework behavior difficulties in elementary students.

Even when specific skills were measured directly, the results for the second research question were also inconsistent across participants and raters. When improvements were noted, these improvements were not necessarily maintained over the course of the HOPS intervention. Moreover, all participants struggled to implement skills related to time management and their use of the homework assignment tracking form never reached mastery without prompts and reminders from the researcher. Consequently, teacher reports of homework behaviors fluctuate over the course of the HOPS interventions for two of the three participants. The participant whose teacher reported higher mastery of homework behaviors was the participant who did not complete the HOPS intervention.

When reflecting on the primary purpose of this study, the targeted, psychosocial intervention (HOPS) implemented by a school mental health provider did not convincingly decrease the EF deficits in elementary age children. Given this, the researcher concludes that the HOPS interventions were largely ineffective on elementary

students with EF deficits. Only a couple specific skills related to organizational skills demonstrated improvements. The participants who completed the intervention had the most success using the HOPS interventions with organizing their binder and bookbag in comparison to baseline. These two skills may have been impacted the most because they were the most tangible concepts and they were related to items that the students used daily, so they received more personal benefits for maintaining organization with them.

The other two organizational skills, locker and desks, may not have been as feasible for the participants to maintain given that both were extremely limited in functional storage and space. For example, the locker was essentially a single rectangular space big enough to fit one clear shoebox and a few thin notebooks could fit underneath or on top. It is also noteworthy that the desks for Participant 1 and 2 consisted of a desktop. Anecdotal observations showed that when the HOPS intervention session occurred, the desktops of Participant 1 and 2 tended to look similar to the majority of their class. So, although HOPS was monitoring three components for desk organization, only one of the components (no loose objects) easily related to the participants. The lack of daily need for organization in the locker or desk may also be a reason why participants did not make progress with their organizational skills in these areas.

The participants did not appear to like the Time Management Checklist, so it is not possible for their use of this skill to increase because they consistently did not use it. One possible explanation is that the items included in this checklist were irrelevant to fifth grade students. More specifically, the HOPS Time Management Checklist monitors participants recording and studying for tests and quizzes and planning for long-term projects. The structure of the fifth-grade curriculum in this school system, and perhaps

most school systems, is such that fifth-grade students do not have regular tests or quizzes, and they also have very few long-term projects. When presenting these portions of the HOPS interventions to Participant 1 and Participant 2, both were at a loss for an example of what they could document on their homework tracking sheet for time management.

Another possible explanation for the lack of improvement in HOPS skills is that the HOPS intervention as written is not easily applicable to fifth-grade students without modifications to the content. There may be other organizational skills or time management skills that are more relevant to elementary-aged students. For example, many of the classrooms in this particular school district are moving away from homework for elementary school students other than continued practice with individualized learning technology resources and reading for 20 minutes each night. The lack of emphasis on homework means that students are less likely to see the benefit of recording and documenting the accuracy of their homework because homework completion is not emphasized in their classrooms. Another possibility is that younger students may need more frequent monitoring than is recommended in the HOPS manual. Because the skills or concepts of HOPS are likely novel to younger students, they may benefit from more frequent checks and reminders to help them become proficient in their independent use of the various skills taught through the HOPS interventions.

The HOPS interventions allowed students to earn points towards desired rewards for displaying the skills taught. When the larger environment does not emphasize the skills being taught, as is the case with homework completion, there is likely to be less motivation for the participants to complete the HOPS homework tracking sheet even for additional rewards. Additionally, during the school day students are using more adaptive

learning technology resources to work at their own pace in place of traditional whole group instruction and independent work to reinforce concepts. Rather than monitoring homework recording or time management for tests, quizzes, and projects, it may be more relevant for these students to self-monitor their classroom work assignments or their progress toward a goal within their adaptive learning programs.

Another anticipated result of this study was that teacher reports of homework behavior difficulties would decrease, and the application of homework, organization, and planning skills strategies would increase. Teachers provided feedback on participants' homework behaviors through a survey emailed to them each week. Unfortunately, even though the email was sent each week, teachers did not always provide an immediate response. At times, their responses may come a week or two after the initial survey. A review of response dates also indicates that they may respond to several surveys at the same time due to missed data points. In essence it is very likely that although the intent was weekly monitoring of homework behaviors, the actual responses may have been more spread out than anticipated. It is also likely that since the responses were collected retroactively, the actual homework behaviors for a specific time period may not be accurately represented due to natural lapses in memory.

Collectively, it appears that the HOPS interventions were largely ineffective for these fifth-grade students. This study was implemented with minimal modifications to the prescribed treatment. A barrier, however, maybe that some of the skills presented in HOPS may not be relevant for fifth-grade students. As previously noted examples, elementary school students may have less homework, tests, quizzes, and long-term projects than are typically required for older students. Additionally, it is unclear if the

additional measure used for assessing EF deficits (i.e., BRIEF2) was the best measure to ascertain the impact on EF. Finally, the addition of the teacher weekly behavior report card on homework behaviors may not have had the intended effect of gathering data in real-time on how the participants' homework behaviors changed through the use of the HOPS interventions.

Limitations

The small sample size of this study is a limitation. In comparison to previous research studies with the HOPS interventions, more research is needed with larger sample sizes to better understand the impact of HOPS interventions on fifth graders. Teacher input is important to monitor the impact of the HOPS interventions on EF skills in students. A limitation for this study is that teachers were not always consistent in providing the weekly feedback requested regarding homework behaviors. Future studies should explore ways to remove barriers to obtaining regular feedback from teachers. Despite these limitations, this study contributes to the existing literature because it clarifies that the HOPS interventions are not appropriate for elementary-age students.

Future Research

Future research with HOPS interventions could explore whether or not modifications of the required components are needed to make the intervention more relevant to younger participants. The HOPS interventions are built around participants learning skills, monitoring their progress, and receiving points that they can redeem for rewards when they meet mastery criteria for specific EF skills. The participants in this study did not appear to be as motivated as expected to earn the rewards they requested at the start of the study. The participant who did not complete the study made this a point of

contention and never committed to specific rewards that he wanted to earn. Future studies could explore whether or not rewards are needed for HOPS to be an effective intervention.

Another option is to embed the HOPS skills into the current classroom management system so that the organization, time management, and planning skills are explicitly taught as part of a larger classroom expectation. For example, the classroom of Participants 1 and 2 had an extensive reward system in place for students who earned points for desired behaviors. This already existing reward system may have been more effective at motivating participants than the reward system created specifically for the HOPS interventions. Distinguishing between whether embedded or stand-alone rewards are more effective is an option for future studies.

A final option for future research is to implement the parent training portion of HOPS to see if giving parents explicit instruction on how to help their child with homework, organization, planning and time management is more effective with elementary age children than the HOPS interventions alone. Anecdotal observation of Participant 2 and his mother reinforces this suggestion. When HOPS interventions began, Participant 2 had an agenda and every week his mother wrote in his agenda what his commitments were outside of school, home responsibilities, upcoming assignments due, etc. When we discussed the HOPS skill of homework recording, Participant 2 initially referred to it as something that his mother did for him. When given the option, he chose to use the HOPS tracking sheet instead of the planner, but overall, he never really grasped this as something he should do independently, as there appeared to be no motivation for him to complete it independently.

Langberg's (2014) *Improving Children's Homework, Organization, and Planning Skills (HOPS): A Parent's Guide* is designed to provide practical techniques for parents to use independently or in tandem with the HOPS interventions implemented in school. It is possible that Participant 2 may have been more receptive to using the planning or recording his homework if the skill was introduced and modeled with the gradual release by his mother rather than by the researcher during the HOPS sessions. Participant 1 had a similar pattern in that she worked on organization with her special education teacher as part of her special education services. The special education teacher used a planner with notes on what specifically the student needed to record to maintain organizational skills. Participant 1 also chose to use the HOPS Homework Tracking Sheet in lieu of her given planner to record homework assignments and get teacher initials. This participant may have benefitted from her special education teacher having the HOPS parent training to help reinforce the same skills that were being taught through the HOPS interventions. Langberg (2014) notes that some of the interventions in the parent guide are easily completed by any adult who can monitor the student's progress at least once every week and the term "parent" can refer to any adult responsible for consistently helping a child improve their homework, planning, and organizational skills. Future research could use this guide along with the HOPS interventions to note if the combined interventions are more effective with elementary students with ADHD.

While previous research indicates that HOPS is an effective intervention for middle and high school students with ADHD, the present study did not find the same impact with fifth grade students. It is still the belief that developing organization, time management, and planning skills are enduring life skills that students need for success in

K-12, college and their chosen occupation or career path (Langberg, 2014). The only question is how to effectively implement these skills so that the greatest measurable impact is sustained for students with the greatest need. This is the biggest variable for future research studies to manage and unravel.

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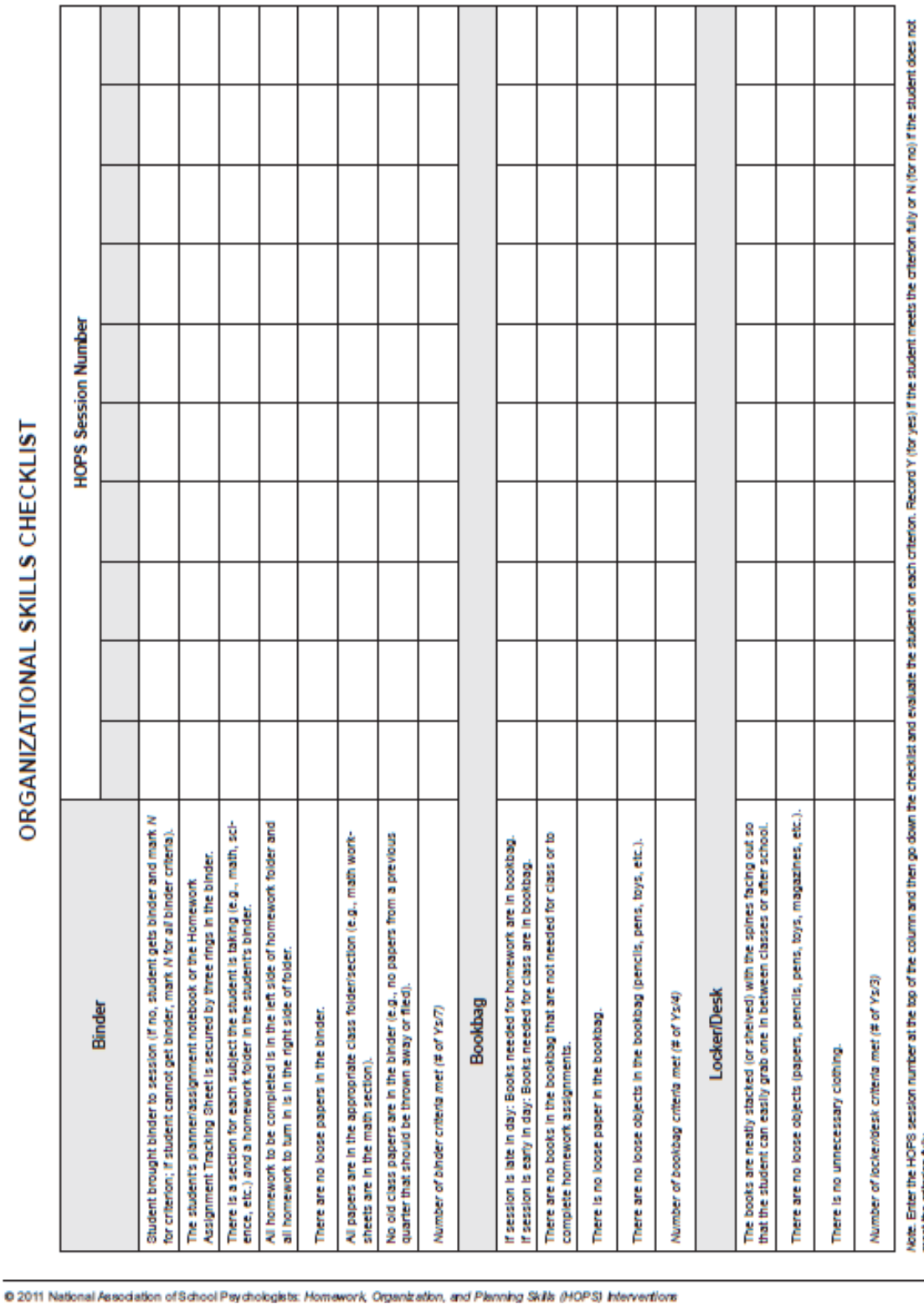
Appendix A: Organizational Skills Checklist



ORGANIZATIONAL SKILLS CHECKLIST

Binder	HOPS Session Number									
Student brought binder to session (if no, student gets binder and mark *N* for criterion; if student cannot get binder, mark *N* for all binder criteria).										
The student's planner/assignment notebook or the Homework Assignment Tracking Sheet is secured by three rings in the binder.										
There is a section for each subject the student is taking (e.g., math, science, etc.) and a homework folder in the student's binder.										
All homework to be completed is in the left side of homework folder and all homework to turn in is in the right side of folder.										
There are no loose papers in the binder.										
All papers are in the appropriate class folder/section (e.g., math worksheets are in the math section).										
No old class papers are in the binder (e.g., no papers from a previous quarter that should be thrown away or filed).										
Number of binder criteria met (# of Ys/7)										
Bookbag										
If session is late in day: Books needed for homework are in bookbag. If session is early in day: Books needed for class are in bookbag.										
There are no books in the bookbag that are not needed for class or to complete homework assignments.										
There is no loose paper in the bookbag.										
There are no loose objects in the bookbag (pencils, pens, toys, etc.).										
Number of bookbag criteria met (# of Ys/4)										
Locker/Desk										
The books are neatly stacked (or shelved) with the spines facing out so that the student can easily grab one in between classes or after school.										
There are no loose objects (papers, pencils, pens, toys, magazines, etc.).										
There is no unnecessary clothing.										
Number of locker/desk criteria met (# of Ys/3)										

Note. Enter the HOPS session number at the top of the column and then go down the checklist and evaluate the student on each criterion. Record Y (for yes) if the student meets the criterion fully or N (for no) if the student does not meet the criterion fully.

Appendix B: Time Management Skills Checklist

		HOPS Session Date							
Test & Quiz Recording	**Points**								
1. Student recorded an upcoming test or quiz in planner at least 1 day in advance in *general terms* (e.g., test today).	2								
2. Student recorded upcoming test or quiz in planner at least 1 day in advance in *specific terms* (e.g., listed pages covered).	3								
Test & Quiz Studying	**Points**								
1. Student *designated a time to study* for an upcoming test at least 1 day in advance of the test (e.g., study for test today).	4								
2. Student designated a time to study and recorded the *amount of time* to study (e.g., study for science, 30 minutes).	5								
3. Student designated a time to study and recorded the study *method* (e.g., outline chapter 4 or make flash cards for math).	6								
4. Student designated a time to study and recorded the amount of time *and* method (e.g., study flash cards for 20 minutes).	7								
Long-Term Projects	**Points**								
1. Student recorded in planner an upcoming project at least 1 week in advance of project due date.	4								
2. Student recorded in general terms a specific day to work on a project at least 1 day in advance of due date (e.g., work on project).	5								
3. Student recorded a specific day to work on a project at least 1 day in advance of due date and listed a specific activity (e.g., research topic on computer).	6								
4. Student broke down a project into at least two separate tasks and assigned deadlines for each (e.g., do computer research by 6/12/10 and write rough draft by 6/22/10).	7								
Evening Schedule	**Points**								
1. Student completed an evening schedule.	3								
2. Student recorded a specific amount of study time or homework time on the evening schedule.	4								
3. Student recorded a specific amount of study or homework time and recorded the specific activities to be completed.	5								

Appendix C: Homework Assignment Tracking Sheet

Class/Subject	Monday ____	Tuesday ____	Wednesday ____	Thursday ____	Friday ____
	Teacher Initials ___ # Missing Assign. ___	Teacher Initials ___ # Missing Assign. ___	Teacher Initials ___ # Missing Assign. ___	Teacher Initials ___ # Missing Assign. ___	Teacher Initials ___ # Missing Assign. ___
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Note. The teacher's initials indicate that the homework assignment was recorded accurately; # missing assignments = the number of assignments not turned in that should have been.

Appendix D: Teacher Weekly Behavior Report Card

Reflecting on [PARTICIPANT'S] homework, organization, and planning skills for the week, please rate how often the following behaviors were displayed:				
	Never (0)	**Sometimes (1)**	**Often (2)**	**Almost Always (3)**
Student recorded homework assignments accurately with enough detail.	N/0	S/1	O/2	AA/3
Student ensures materials and assignments are returned to school on time.	N/0	S/1	O/2	AA/3
Student completed homework as requested.	N/0	S/1	O/2	AA/3

Appendix E: Institutional Review Board Approval

INSTITUTIONAL REVIEW BOARD
OFFICE OF RESEARCH INTEGRITY

DATE:	September 6, 2018
TO:	Ayanna Peake
FROM:	Western Kentucky University (WKU) IRB
PROJECT TITLE:	[1301220-1] Responding to Executive Functioning Deficits through the Homework, Organization, and Planning Skills (HOPS) Interventions
REFERENCE #:	IRB 19-021
SUBMISSION TYPE:	New Project
ACTION:	APPROVED
APPROVAL DATE:	September 6, 2018
EXPIRATION DATE:	July 31, 2019
REVIEW TYPE:	Full Committee Review

Thank you for your submission of New Project materials for this project. The Western Kentucky University (WKU) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Full Committee Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by a *signed* consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of July 31, 2019.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Paul Mooney at (270) 745-2129 or irb@wku.edu. Please include your project title and reference number in all correspondence with this committee.

Appendix F: HOPS Intervention Schedule

Implementation Plan for the Homework, Organization, & Planning Skills (HOPS) Interventions					
Week	**Phase**	**Session Title**	**Session Type**	**Session Length**	**Session Content**
1	Pre-HOPS	Pre-HOPS Baseline	n/a	n/a	Get baseline data with Organizational Skills Checklist
2	Pre-HOPS	Pre-HOPS Baseline	n/a	n/a	Get baseline data with Organizational Skills Checklist
3	Pre-HOPS	Pre-HOPS Baseline	n/a	n/a	Get baseline data with Organizational Skills Checklist
4-1	HOPS Baseline	HOPS Session #1	1:1	20 min	rapport, present HOPS, complete baseline assessment of organizational system using Organizational Skills Checklist, create rewards menu
4-2	HOPS Baseline	HOPS Session #2	1:1	20 min	complete baseline assessment of organizational system using Organizational Skills Checklist, introduce HOPS organization systems (purging old system, give materials for new system)
5-1	HOPS Training	HOPS Session #3	1:1	35 min	checklists: organization, teacher; introduce homework management & rewards systems
5-2	HOPS Training	HOPS Session #4	1:1	20 min	checklists: organization, teacher; finish organization system & refine homework management plan
6-1	HOPS Training	HOPS Session #5	1:1	20 min	checklists: organization, teacher; troubleshoot & create visual reminders; prep for parent meeting
6-2	HOPS Training	HOPS Parent Meeting #1	individual family or group of families	60 min	overview, student shares checklists & point system, Q&A, create home system [missing work tracking plan]

7-1	HOPS Training	HOPS Session #6	1:1	20 min	checklists: organization, teacher; review parent meeting; create plan for maintaining materials organizational system
7-2	HOPS Training	HOPS Session #7	1:1	20 min	checklists: organization, teacher; intro to planning & studying for tests
8-1	HOPS Training	HOPS Session #8	1:1	20 min	checklists: organization, teacher, time management; intro to planning for long-term projects
8-2	HOPS Training	HOPS Session #9	1:1	20 min	checklists: organization, teacher, time management; troubleshoot time management & introduce evening schedule
9-1	HOPS Training	HOPS Session #10	1:1	20 min	checklists: organization, teacher, time management; refine after-school activities planning with evening schedule
9-2	HOPS Training	HOPS Session #11	1:1	20 min	checklists: organization, teacher, time management; review/revise materials organization & homework plans
10-1	HOPS Maintenance	HOPS Session #12	1:1	20 min	checklists: organization, teacher, time management; introduce self-management & create self-management plan
11-1	HOPS Maintenance	HOPS Session #13	1:1	20 min	checklists: organization, teacher, time management; review self-management checklist; prep for parent meeting
12-1	HOPS Maintenance	HOPS Parent Meeting #2	individual family or group of families	60 min	student presents graphs of intervention data, review home system, create home-based monitoring & rewards system
13-1	HOPS Maintenance	HOPS Session #14	1:1	20 min	checklists: organization, teacher, time management; reflect on parent meeting; troubleshoot self-

					management plan
14-1	HOPS Maintenance	HOPS Session #15	1:1	20 min	checklists: organization, teacher, time management; troubleshoot self-management & discuss ending
15-1	HOPS Maintenance	HOPS Session #16	1:1	20 min	celebrate progress with HOPS, no checklists, cash in all rewards, fun activity