Identifying Impactful Teaching Approaches for Students with ADHD: Reflections of Elementary School Experiences

By

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Abstract

How can teachers improve their instructional practices to benefit students with ADHD academically? In this qualitative study, college-aged students retrospectively identify teaching practices that supported them when they were Kindergarten-8th grade students who had been diagnosed with ADHD. Three research-supported themes emerged from what the participants recalled from their experiences. First, all participants agreed that a solid and supportive student-teacher relationship was impactful to their success. The literature supports that a positive student-teacher relationship, while impactful for all students, can be imperative for those with ADHD. Second, the participants spoke to how teachers supported their engagement by creating a high-interest level in the material or promoting interest by the way they taught. While the idea of promoting student interest is not new to the educational community, more recent literature based on brain research has spoken to the need to use and engage student interest. Third, the participants fondly remembered specific lessons in which they were involved in creating or supporting their understanding. The literature reinforced this, noting that interactive and experiential units have lasting impacts on retaining knowledge at all levels. Both the literature and participant reflections lead to instructional implications for teaching students with ADHD moving forward. Those implications include teaching practices becoming student-centered by planning with the end goal in mind, incorporating student interest, engaging student interest with a complex problem or phenomena, and guiding student discovery of understanding during instruction.

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Table of Contents

Chapter 1

Introduction

Background and Rationale

American teachers walk into classrooms across the nation facing daunting challenges. Teachers remain untrained for students with challenging behaviors or academic disabilities that come to the classroom every year. Teachers are constantly implementing the latest district mandates like full inclusion classrooms, co-teaching, Professional Learning Communities, social-emotional programs, formative/summative testing, intervention meetings, and finally, with the minimal time left, teachers reflect on instructionally effective practices in the classroom.

I have experienced the need for research-based instructional strategies firsthand. Every year there are students in my class who struggle to attend to learning. They miss directions, requests, and hours of instruction over the year. These students with inattention fall farther and farther behind their peers. Many of these students try their best in class to stay organized, pay attention, and remain engaged in learning, yet they struggle.

There are some interventions and strategies that I have tried: sitting students closer to the front of the room, allowing movement around the room to learn, doing movement breaks throughout the day, and small group instruction. These interventions are only based on teacher intuition, talking to colleagues, or asking the school psychologist for ideas. They are not research-based, and there is only moderate efficacy with some students.

The most recent American Psychiatric Association estimates have 8.4% of children displaying diagnosable symptomology of ADHD (American Academy of Pediatricians [AAP] aap.org, accessed 11/29/2020). The CDC reports that 6.1 million children have been at some

point diagnosed with ADHD (Centers for Disease Control and Prevention [CDC] https://www.cdc.gov/ncbddd/adhd/data.html). That means at least two students per classroom, on average, are diagnosed with ADHD.

Problem

Research over the past thirty years has detailed the negative impact on academics for students with ADHD (DuPaul et al., 2014; Preston et al., 2009). Improved neuroimaging and testing in neuropsychology have led to increased understanding of the relation between attention deficits and academic performance (Castellanos et al., 2002).

The symptomology of ADHD is directly at odds with how our current education system teaches students. They often have problems sustaining attention to effortful tasks and completing independent work. Students are plagued by low performance on classroom tasks due to a lack of attention to instructions, attention to the task, and the inability to tune out external stimuli. Students with inattention have other challenges, including poor test scores, inadequate study skills; poor organization of property and writing pieces; and a lack of attention to teacher lectures and classroom discussions (DuPaul & Stoner, 2014).

The psychological viewpoint of ADHD as defined in the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition: DSM-5 (2013) is:

> ADHD is a neurodevelopmental disorder defined by impairing levels of inattention, disorganization, and/or hyperactivity-impulsivity. Inattention and disorganization entail the inability to stay on task, seeming not to listen, and losing materials at levels that are inconsistent with age or developmental level. Hyperactivity-impulsivity entails overactivity, fidgeting, inability to stay seated, intruding into other people's activities, and

inability to wait—symptoms that are excessive for age or developmental level. (https://doi-org.libproxy.uwyo.edu/10.1176/appi.books.9780890425596.dsm01)

The DSM-5 included three unique subtypes of ADHD previously undesignated. The most influential subtypes to academic deficits are ADHD-Inattentive (ADHD-I) and ADHD-Combined (ADHD-C) (Gray et al., 2017). Many students are diagnosed with ADHD-inattentive subtype when the clinical symptomology of traits shows more inattentive behaviors or ADHD-combined subtype when there is clinical symptomology of traits in both the inattentive group and the hyperactive/ impulsive group.

The inattentive type predicts poor academic achievement with the hyperactive/impulsivity traits not adding to educational impact or interacting in academic achievement (Gray et al., 2017). Harrison et al. (2019) reported, "As children grow, hyperactivity and impulsivity appear to decrease, and inattention remains constant" (2019, p. 602). Inattention and related academic deficits are a problem that plague students with ADHD throughout their school career (Gray et al., 2017).

Researchers have attempted to address the lack of academic achievement by focusing on working memory and executive functioning deficits when present (DuPaul & Stoner, 2014). The study done by Prestonet al. (2009) found, "academic achievement was significantly predicted by performance on tests of attentional control/switching. … this impairment appears to be accounted for by the attentional domain that requires more executive control than the other domains of attention" (p. 246). The findings upheld previous findings that executive functioning deficits in children with ADHD lead to academic difficulties. Still, the deficits were neither consistent nor severe enough to account for all academic deficits in ADHD (2009).

Medicinal interventions have been tried to help students with ADHD be successful in the classroom. Pharmacological intervention, usually including stimulant medication, is often the first treatment line in the United States (DuPaul, 2007). Pharmacological support is rarely sufficient to improve academic achievement; even when it helps control the outward symptoms of hyperactivity, it is ineffective at addressing attention deficits that are the most problematic (Daley & Birchwood, 2009; DuPaul et al., 2011).

Alternative therapies including, cognitive behavioral therapy alone or in conjunction with medication, have been tried with minimal success in academics but with more success in behavior modification. However, when students pick interventions, functional behavioral assessments have been more helpful in achieving academic gains (Harrison, Soares, Rudzinski, & Johnson, 2019). Additionally, studies where students have a daily report card with teacher consultation, organizational training, or combined training in the Challenging Horizons Program were all shown to have teacher rated positive academic impacts in students with ADHD (Evans, Owens, & Bunford, 2013).

Single case study research supports a variety of intervention strategies. Task engagement and test performance for all students increased using class-wide peer tutoring with the explicit teaching of behaviors and goals (DuPaul et al., 2011; Daley & Birchwood, 2009). Computer-assisted instructional (CAI) programs have also shown positive effects on student learning due to increasing time-on-task and work production (DuPaul & Stoner, 2014). Self-monitoring is one of the most promising interventions where students are trained and normed to discern their behaviors and modify them accordingly. In more mild cases of ADHD, this is an effective strategy that leads to improvements in the long term and across subjects (DuPaul et al., 2011).

Task modification (TM) is a proactive intervention that modifies the student task or the instruction to fit the specific deficits of a child with ADHD.

The problem is that students with ADHD are underperforming in academics, and they are incurring adverse life outcomes due to the academic impacts of inattention. The literature is evident on the effect of inattention on academics. Still, it is less clear how teachers and systems can support students' academic achievement when they have behavioral inattention. The literature has shown supports and modifications that can be useful. However, there is still a lack of research in instructional practices the teacher can use to instruct in ways that would benefit ADHD students academically.

Purpose

The literature is mostly silent about the academic impact of specific instructional strategies for students with ADHD. The research on routines, techniques, and adaptations has only recently begun to focus on the educational implications for students and not just the behavioral aspects (DuPaul & Stoner, 2014). Unfortunately, many studies on ADHD are funded by the National Institutes for Health, which prefers, as shown by funded projects, to focus on the behavioral aspect of ADHD (DuPaul, personal communication, October 15, 2019).

This lack of funding for academic-based interventions has left a significant question in the research around what instructional practices are best suited to teaching students with ADHD. The purpose of my study was to acknowledge the lack of research around instructional practices and lend a starting point to lead other research. My secondary aim was to instruct my practice as an elementary educator to teach students in my classes with ADHD more effectively.

I proposed to circumvent the lack of literature by using research about effective strategies and interventions. I have also done interviews with college students expressing symptoms of

ADHD in elementary school about their recalled experiences. I gleaned from those experiences what methods of instruction and supports were the most effective for them. Using the research around effective supports, interventions, and interviewees' reflections, I have put together themes that can inform instructional practices for students with ADHD.

Questions

The research questions used to guide this project are:

1. What are perceptions of college students with ADHD of effective instructional approaches (practices) that supported their academic achievement in their K-8 educational career?
2. Based on college student perceptions and research on effective interventions for students with ADHD, what are possible effective instructional practices in the elementary classroom for students with ADHD?

Significance

Students with ADHD come into primary school with an academic disadvantage. My research's significance is in adding to the base of knowledge about best practices for students with ADHD and how to support them academically with literature supported and ADHD student recommended teaching practices.

Chapter 2

Literature Review

Introduction

This literature review aims to understand the impact of ADHD-Inattentive (ADHD-I) on academic achievement, current academic interventions, and possible teaching approaches to support academic achievement in students with ADHD. Specifically, the literature was reviewed to see what instructional approaches are either directly credited with improving academic achievement in students with ADHD or fit the greatest number of suggested instructional practices within their framework.

This literature review used books, articles, and personal communication. This supported understanding of what academic deficits exist for students with ADHD-I and what research was currently published on academic interventions and instructional approaches for students with ADHD-I. The review began with finding articles related to ADHD by using key term searches. These included: ADHD, ADHD interventions, ADHD instructional approaches, and ADHD academics. Combining key terms to make variations of these phrases while also employing synonymous vocabulary found further articles. Dr. George DuPaul, currently of Lehigh University, was consistently cited throughout the literature as an expert on students with ADHD.

Dr. DuPaul is one of the leading researchers who has focused on ADHD for going on thirty years (DuPaul & Stoner, 2014). DuPaul's career has focused on researching behavior and academic achievement in K-12 students with ADHD. I was able to engage in a short interview with DuPaul that led to the current project goal of beginning to fill the gaps related to research in instructional approaches for students with ADHD.

Next, I found relevant articles citing related studies or findings, and I read the original paper to learn more about what the original author or case study presented. For example, the first few articles were meta-analyses of dozens of articles and case studies over time. When a pertinent addition to the current research was found in the in-text citation and works cited, I used the citation to find the original study and skim the study for information relevant to ADHD and academic achievement.

Finally, when I found a book related to ADHD, instructional approaches, or interventions, I searched the texts on the shelves around the book for other texts that, from a short perusal of the chapter titles and indices, would be relevant to the research. Using these methods, I discovered several valuable and insightful resources that led to a more robust picture of possible instructional approaches to support the academic achievement of students with ADHD.

ADHD: The Disorder

To best instruct students with ADHD, the disorder must first be understood by looking at what diagnostic research says. The psychological viewpoint of ADHD as defined in the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition: DSM-5 (2013) is:

> ADHD is a neurodevelopmental disorder defined by impairing levels of inattention, disorganization, and/or hyperactivity-impulsivity. Inattention and disorganization entail inability to stay on task, seeming not to listen, and losing materials, at levels that are inconsistent with age or developmental level. Hyperactivity-impulsivity entails overactivity, fidgeting, inability to stay seated, intruding into other people's activities, and inability to wait—symptoms that are excessive for age or developmental level. (https://doi-org.libproxy.uwyo.edu/10.1176/appi.books.9780890425596.dsm01)

Additionally, a diagnosis of ADHD requires that symptoms be present before age 12 regardless of age of diagnosis. Also, symptoms vary in severity and must be present in more than one setting. Symptoms may be mitigated by a number of factors that naturally engage attention or create mental stimulus to the individual (American Psychiatric Association, 2013). This research focused on characteristics and deficits in students with ADHD-Inattentive disorder.

Symptoms and behaviors have recently been linked to Neurostructural differences. Ultimately, neuroimaging has led to increased information about the brain's structure and organization in children with ADHD. Recent research has shown organizational differences in the brain between children with ADHD-I and ADHD-C and differences from the organization and structure of typically developing children (Saad et al., 2017). ADHD is a neurodevelopmental disorder that impacts the ability to sustain attention on less desired tasks and impacts regions of the brain responsible for task adherence.

By extension, the DSM-5 included three unique subtypes of ADHD. The most influential subtypes to academic deficits are ADHD-Inattentive (ADHD-I) and ADHD-Combined (ADHD-C) due to the inattentive symptoms, with ADHD-H only having behavioral contributions (Grayet al., 2017). The child with only inattentive behaviors tends to be described as a slow processor, a daydreamer, and more socially reclusive. They also tend to have more focused attention issues, whereas the combined presentation seems to have more sustained attention issues (DuPaul & Stoner, 2014). Therefore, students with inattentive behaviors often blend into the background and do not call as much attention as those with hyperactive behaviors, even though the inattentive students may miss academic experiences the most.

Thus, ADHD is primarily identified in the elementary school years when inattention begins impacting academics. The disorder stays relatively stable after the elementary years, but

challenges with restlessness, inattention, poor planning, organization, and impulsivity can continue to cause difficulties into adulthood (American Psychiatric Association, 2013). Academics are the most influenced area during K-12 education, yet adults with ADHD struggle with daily living tasks that necessitate organization, attention, and thoughtfulness to be successful.

In addition to educational deficits, there can be mild delays in language, motor, and social development along with low frustration tolerance and irritability (American Psychiatric Association, 2013). Sjöwall et al. (2013) found that children with ADHD differed substantially from controls in emotional regulation and emotion recognition while tests of executive function, delay aversion, and reaction time variability were not bounded to the condition. Summarily, there are many comorbid deficiencies related to ADHD that may be contributing to an overall lack of school success.

ADHD: Impact on academics

McConaughy et al. (2011) state that students with ADHD show academic dysfunction on standardized measures of IQ. Meta-analysis of cognitive ability studies over twenty years showed that ADHD students scored significantly lower on full-scale IQ tests leading to a roughly nine-point gap between students with ADHD and typically performing peers on most standardized tests (McConaughy et al., 2011). Students with ADHD show common cognitive task-related deficiencies across a broad spectrum of performance metrics.

The research between the early 1990s and 2019 is evident on the negative impact on academics for students with ADHD (DuPaul et al., 2014). Gray et al. (2017) found that inattention profoundly impacts students' academic achievement in both classroom performance and standardized assessments. Teacher-rated inattention predicted lower grades, lower-rated

academic competence, and a higher likelihood of attrition from high school (Gray et al., 2017). Additionally, DuPaul and Stoner (2014) highlighted a major reason for the impact of inattention on classroom academic achievement: “Up to 80% of children” with ADHD have problems with work completion and performance on academic tasks (p. 7).

Struggles for ADHD students lie in work completion and the ability to maintain attention during teacher-presented content. In *ADHD in the School*, DuPaul and Stoner (2014) connected that inattentive students are often off task during teacher instruction and independent work. This means they have less opportunity to engage with the academic material and less practice in the work than typical peers. The lack of skill retention leads teachers to rating students with ADHD lower on cognitive ability tasks and can lead to difficulty in distinguishing skill deficits from performance deficits (DuPaul & Stoner, 2014). A longitudinal study was done by DuPaul, Morgan et al. (2016) showed that over their K-5 career, a significant number of students identified with ADHD either remained below average in reading, 39.7%, and math, 39.4% or started in kindergarten with average performance only to decline to have below-average academic skills by fifth grade in math, 27.3% (DuPaul et al., 2016, p. 1433). Students with ADHD who cannot focus on academic tasks presented or share their thinking in discernable ways have a far less likely chance of being successful academically than their less impaired peer group or averagely attentive children.

Students fail academically because of missing the content from the current year's instruction, but they also have holes from previously missed instruction leading to academic difficulty. McConaughy et al. (2011) showed that "15-55% of children with ADHD exhibited 'clinically significant impairment in academic performance" (McConaughy et al., 2011, p.221). Their findings also showed that children with ADHD had skill deficiencies across many

cognitive domains suggesting that many students with ADHD need directly targeted interventions to reduce deficits in academic and social areas. The study suggested that some students may need one-on-one instruction to fill academic holes in reading, writing, or math, while some may benefit from research-backed interventions to improve the disorganization and lack of work product that often accompanies ADHD-Inattentive presentation (McConaughy et al., 2011).

While individual interventions for academic skills may need to be implemented for success, there are other issues with specific attentional deficits in children with ADHD that correlate to academic difficulties as well. Preston et al. (2009) assessed sustained attention, selective attention, and attentional control switching. Sustained attention is maintaining focus for an extended period. Selective attention is the ability to focus on the necessary stimuli and disregard the irrelevant stimuli. Attentional control/switching involves executive functioning skills to change focus flexibly and adaptively while also controlling impulsive responses to elicit more relevant responses. The authors found that the performance on the attentional/control switching portion of the test most accurately predicted academic achievement. This finding shows that the attentional habit most correlated to academic success uses the executive control domain more than other attention types. This study supports prior findings that children with ADHD who have executive functioning deficits often academically underperform their ADHD peers without executive functioning deficits (Preston et al.,2009). The study, while naming executive functioning as playing a role in academic difficulties, allows for a more diagnostic approach in looking at a smaller subset of function with attentional/control switching being a more helpful predictor of academic achievement rather than just executive functioning deficits (Preston et al., 2009).

Summarily, there are many academic and neurological issues surrounding the complex issue of academic achievement for students with ADHD. Researchers have only recently begun to scrutinize the academic impacts of ADHD and formulate possible interventions to support academic success.

Research-Based Interventions

Three decades of research on effective interventions have yielded change over time from addressing behavior concerns to focusing on academic achievement (Harrison et al., 2019). Intervention strategies are a set of practices that teachers engage students in to remediate either skills, knowledge, or behaviors with the intent of closing deficit gaps.

Single case study research supports various intervention strategies, including peer tutoring, computer-assisted instruction, self-monitoring, and task modification. Students with Individual Education Plans (IEP) may be pulled from the regular education setting to work intensively on academic deficits at times. However, DuPaul et al. (2016) found academic interventions to be best received and more effective when administered in the general education classroom instead of a special education setting. In keeping with the idea of intervening in the general education classroom, the less invasive and time-consuming a practice, the more widely its possibility of implementation by the classroom teacher.

One of the most effective interventions for students with ADHD and typically developing peers is class-wide peer tutoring. Class-wide peer tutoring with the explicit teaching of behaviors and goals has increased task engagement and test performance for all students (DuPaul et al., 2011). Peer tutoring is a strategy where two students work together on a task, with one student acting as the coaching teacher giving instruction and feedback at the learner's pace. This model allows for one-to-one ratios, learning at the student's pace with ADHD, continuous academic

prompts, and immediate feedback leading to more time engaged in academics for students with ADHD (DuPaul & Stoner, 2014). The more time students are engaged with the work and receiving prompt feedback and correction, the more likely they are to complete academic tasks successfully.

Computer-assisted instructional programs have also been shown to positively affect student learning due to increasing time-on-task and work production (DuPaul & Stoner, 2014). Computer-assisted instruction can present students with explicit instruction, including clear goals and objectives, simplified tasks, and immediate feedback. There is also a gamification component in most computer-assisted instruction platforms that further engages attention (DuPaul et al., 2014).

A form of computer-assisted instruction that has shown promise with students with ADHD in learning and retaining knowledge is hypermedia tools. Hypermedia presents learners with various learning inputs that activate auditory and visual learning simultaneously (Fabio and Antonietti, 2012). Fabio and Antonietti (2012) created their hypermedia tool to have the structure and organization of information like human associative memory. They also allowed learners to choose their sequence to go through preferred material first, lending instruction autonomy to the learner. The use of preferred learning, engaging visuals, and inclusion of audio or video input, simultaneously with the text, was thought to be a mode by which students with ADHD would be most engaged. The study also included the structures of associative memory in the organization of information and immediate feedback to support the learner in gaining the knowledge at an individualized pace. The use of pictures and movies addressed selective attention deficits, and the ability to move through the program at one's own pace allowed students time to process information before moving on to the next topic, addressing sustained attention deficits (Fabio

and Antonietti, 2012). The authors also posited that since distractibility was the main detractor from students' ability to gain knowledge giving multiple inputs of the same information allowed one channel, audio or visual, to make up for the lack of acquisition from the other. The study results showed knowledge acquisition was higher in the hypermedia group than in the traditional classroom group, and even though retention was lower than acquisition, the hypermedia group retained more information a month out than the traditional classroom students (Fabio and Antonietti, 2012). Well-designed hypermedia tools that give an associative flow to instruction, maintain learner centeredness, and are highly engaging for students with ADHD may be a valuable tool in the pursuance of effectively educating students with ADHD.

Self-monitoring is one of the most promising interventions. In this intervention, students are trained and normed to discern their behaviors and modify them accordingly. In more mild cases of ADHD, this is an effective strategy that leads to improvements in the long term and across subjects (DuPaul et al., 2011).

Task modification is a proactive intervention that modifies the student task or the instruction to fit the specific deficits of a child with ADHD. Task modification may include choice making, where the student may choose how to share their learning with a few predetermined but flexible options. Task modification has proven to increase engagement and decrease disruptive behaviors, but it was not clear if there was an academic impact (DuPaul & Stoner, 2014). Other task modifications include reducing task length, dividing tasks into sections, and modifying the instruction's modality according to the student's learning style (Daley & Birchwood, 2009).

Method: Semi-Structured Interviews

Interviews as a foundation for gaining information and answering questions started to flourish in the 1900s. In 1924, Emory Bogardus first revealed interviews' ability to collect data in social research when he listed various interviews in daily life to gain information such as doctors, journalists, psychiatrists, and social workers (Morris, 2015). Brinkman (2013) tells how Jean Piaget, who had received training as a psychoanalyst, was the next influential researcher to use interviewing in a clinical way as he interviewed children while they completed experimental tasks, allowing them to talk freely about what they were noticing. This "clinical" (p. 8) method of interviewing inspired the work of Elton Mayo, who would become responsible for one of the most extensive interview studies at a plant in Chicago in the 1920s and 30s (Brinkman, 2013). This study was a cornerstone in interviewing as it set out the first methodological procedures for a data-based understanding of interviews (Brinkman, 2013). Brinkman connects how the methods of interviewing at the plant roused the interest of sociologists at the University of Chicago, where interviewing became part of their methodological collection. Brinkman goes on to mention how many different qualitative methods around interviewing developed at the University of Chicago. While interviewing as a qualitative method had become more widely accepted in the 1930s (Morris, 2015), by the 1950s, criticism concerning the therapeutic-like nature of interviews and bias began to take hold (Brinkman 2013). Interviewing as a methodology was established in the early 1900s and became a more widely accepted form of research before questions around validity arose in the 1950s.

In education, universities tried to make education a respected academic discipline by only conducting quantitative research. Universities argued that educational research should be conducted in the same manner as other hard sciences (Seidman, 2019). In the 1970s, behaviorist research in education was the rebuttal of the predominately experimental and quantitative

methods, with researchers then splitting into two camps, quantitative and qualitative. The most potent argument between the two sides was the importance of language in studying human beings (Seidman, 2019). Seidman (2019) mentions how in the social sciences, the subjects express their ideas and experiences through language, wherein natural sciences, the subjects are inanimate. Educational research until the 1970s was quantitative research but then shifted towards a qualitative approach to honor the lived experiences spoken by participants.

Education is a social abstraction that is best researched and understood through the lens of those that experience it (Seidman, 2019). Seidman continues by stating how many times in the United States, research concerning schools leaves out the voices of people integral to the school's inner workings. Interviewing is the best research method if the goal is to understand how participants experienced education and their perceptions of that experience (Seidman, 2019). While interviews have been circumspect for perceived bias from participants and interviewers, they have become more accepted in present research as a method to learn about lived experiences.

The semi-structured interview is a structured conversation that allows the researcher to interview with the purpose of gathering descriptions of lived experiences to analyze and interpret the meaning of the described phenomena (Brinkman, 2013). The semi-structured interview gives a road map for the interview that guides the conversation towards predetermined experiences and gives leeway for follow-up questions and probes on information deemed necessary in relation to the project (Brinkman, 2013). Similarly, Bogdan and Biklen (2007) add how the researcher must always be prepared to put the plan aside to pursue opportunities the situation may present in interviews. In conclusion, the semi-structured interview is a method that allows a focused

conversation to be open for exploration of information deemed by the researcher as essential to further the goal of understanding lived experiences.

Construction of semi-structured interviews as a qualitative research method

King et al. (2019) state that flexibility is necessary for qualitative interviewing. The authors further state, instead of fixed questions in a predetermined order, there can be an "interview guide" (p.63) that outlines main topics but is flexible on the phrasing of questions, the order of questioning, and allows for the participant to lead the discussion. Galletta (2013) emphasized reviewing the literature extensively to develop a straightforward research question that will guide developing questions for the interview. Galletta added that the semi-structured interview can be used as the sole method in a qualitative method due to its versatility. This versatility leads to the benefit of attending to lived experiences and gaining insight into theoretically driven variables of the phenomena (Galletta, 2013). King et al. spoke about building the interview guide around the types of questions that lead to eliciting specific types of information from participants.

Furthermore, if questions are written out, the researcher must make sure the questions are not leading the participants to opinions but are instead gathering participant experiences. Bogdan and Biklen (2007) added that quality interviews produce rich data filled with quotes that reveal participants' perspectives, give examples, and detailed descriptions of their experiences. Galletta went on to say that formulating questions and ordering them requires a time investment, including field-testing the questions and interview protocols. Field testing the interview protocols helps ensure the questions will reflect a progression toward exploring the depth of the phenomenon studied.

Bogdan and Biklen (2007) noted most interviews with strangers begin with rapport building by engaging in small talk to find commonalities as a basis for building a relationship. Additionally, the authors recommend briefly informing the participant of your purpose so subjects can keep the purpose in mind when relaying experiences. Galletta (2013) stated, the questions in the beginning, should be open-ended in nature to create space for participant narration. The questions should, however, be deliberate and tied to the focus of the research. Galletta mentions the researcher's focus at this time should be on listening carefully and probing for clarity in the narrative to discern any details of interest that the interviewer may want to return to at the appropriate time later in the interview. Next, the middle section of the interview will focus more directly on questions that will ensure the adequate exploration of the research topic through probes and increased specificity in questioning (Galletta, 2013; King et al., 2019). Summarily, the final section is an opportunity to build on stories that need further exploration, elicit final thoughts, and thanking the participant for their contribution to the research (Galletta, 2013).

Analyzing data in semi-structured interviews

King et al. (2019) noted the necessity of transcribing the interviews as a precursor to analyzing the data with a consistent style so it is clear what transpired in the interview. The authors then state that the point of transcription is to read the content and develop themes: "…patterns in the data that reveal something of interest regarding the research topic at hand" (p. 200). Bogdan and Biklen (2007) speak to the use of coding when developing themes. First, develop a coding system by reading through the data for patterns, regularities, and topics the data covered. Then, note all the words and phrases that correspond to the patterns and data. Finally, you can develop coding categories that allow for the sorting of information from interviews.

Thomas (2017) encouraged the constant comparative method involving going through the data repeatedly and comparing it with other data to create codes and subsequently mark up the data. Finally, the codes and coding categories then lead to themes that summarize the contents of the data collected (Bogdan & Biklen, 2007; Thomas, 2017).

Conclusion

The literature shows the negative impact ADHD has on the academic achievement of students longitudinally. Research-backed interventions make academics more accessible to students, but they require intensive intervention by either the classroom teacher or a designated individual that may not be feasible in today's classrooms. The literature is feeble on teaching approaches that assist students with ADHD in being academically successful. I am looking to fill the gap that currently exists by interviewing college students, with a prior diagnosis of ADHD, about their kindergarten through eighth-grade schooling experiences. I used a literature validated method of semi-structured interviews with open-ended questioning for focused reflection from collegiate students to gather data on teaching approaches that were or were not successful for them.

Chapter 3

Methods

Introduction

The following research methods were part of a qualitative study. The questions driving this research are:

1. What are perceptions of college students with ADHD of effective instructional approaches that supported their academic achievement in their K-8 educational career?
2. Based on college student perceptions and research on effective interventions for students with ADHD, what are possible effective instructional approaches in the elementary classroom?

The objective was to gather recollections from college students, with ADHD, about what instructional approaches were the most beneficial for them in their late elementary and middle-level years in school. A qualitative approach was taken because the main goal was to gain insights into students' subjective perceptions and experiences with ADHD in a K-8 schooling experience retrospectively (Stravakou & Lozgka, 2018). Semi-structured interviews with open questions, characterized by adaptability, allowed interviewees' values and their prior experiences to be more authentic and detailed (Stravakou & Lozgka, 2018).

Methods and Context

The research methods that follow were ruled exempt by the University of Wyoming's Institutional Review Board (IRB) as they posed minimal risk to participants. This chapter will

describe the methods used, including the context of the participant pool and participants, the research tools used, and the methods of analyzing the qualitative data.

Population and Setting

The study took place at a United States land grant "X University" in the western Rocky Mountain region. There are 195 majors with a variety of options for the completion of the study. The total enrollment was ~ 14,000, with an undergraduate enrollment of ~9,000. There was a 26 % non-resident enrollment, with the average high school GPA for new first-year students at ~3.5. Men made up ~52% of the student population, and women made up 48%, with the majority (78%) of students identifying as white. The compilation of the university is primarily white, undergraduate, in-state students. Thus, the population for this research was undergraduates enrolled at this university. The subset that the research looked to find volunteers from was students with a childhood history of diagnosed or suspected ADHD. From that subset, three students were asked to participate in the semi-structured interview method.

Participants

There were two male participants and one female participant. The male participants were both freshmen at a four-year university, one majoring in graphic design and the other majoring in communications. The female participant was a secondary education major in her senior year, graduating in the winter of 2020. All participants attended public schools and graduated from public high schools. All participants had been diagnosed with ADHD, with the female participant initially being diagnosed with ADHD inattentive presentation at a younger age and then having the diagnosis changed around ten years old to ADHD combined presentation. One of the male participants also had MRI scans showing a diagnosis of a more considerable processing

disorder and the corresponding "hole" in his brain. One of the male students had also been enrolled in a "gifted" program in his district from 3rd through 5th grade.

Recruiting Participants

I had a disability support services center send out my email to their listserv soliciting participants, and I posted flyers in public settings to recruit students for the interviews. I offered a ten-dollar amazon gift card to participants as compensation for their time. I also posted the flyer on multiple social media sites and personally elicited local educators to send the flyer to prior students or family members. Students filled out a short online survey to see if they met qualification criteria, the criteria being: previously diagnosed with ADHD before 12 years of age, current enrollment in a university, and a product of public schooling. If students met qualifying criteria, they were instructed to express interest by emailing me if interested in being study participants. I arranged one-on-one interviews in public spaces where participants would feel comfortable or in a virtual meeting platform.

Data Collection

The data collection methods for this study included interviews with open-ended questions and follow-up prompts. The participants were interviewed individually in a public space of their choice or on a video platform. I recorded the interviews for accuracy and had a service transcribe them later for data coding. Finally, I sent transcripts of the interviews to participants via email to see if I omitted anything, taken out of context, or to see if they would like to add further detail to anything we discussed.

Semi-Structured Interview Protocol

The semi-structured interviews contained introductory questions about demographic information, and I shared why I was interested in researching ADHD to support my practices better. This introductory material allowed me to become acquainted with the participant and establish rapport before presenting the questions used for gathering data. I then asked about school experiences, both positive and negative, using follow-up questions to clarify meaning or engender specific examples. Finally, I finished by asking concluding questions about their insights into teaching students with ADHD (see Table 1).

Table 1

Question Categories Used During Semi-Structured Interview

Category	Questions
Report building/Introductory	What is your name?
	Where do you call home?
	What is your current year in school?
	What is your major?
	Why did you choose that major?
	How would you describe your general school experience?
Positive schooling experience	Was there a grade, class, or teacher that stands out in your mind as providing the most positive school experience?
	Thinking about that positive schooling experience, what made it the most positive schooling experience for you?
	In your positive school experience, describe how the teacher taught that helped you, as a learner, to master the content.
	Please describe anything extra (if applicable) the teacher did, outside of the way they taught, that helped you be successful as a student.

(Table continues)

Category	Questions
Negative schooling experience	Thinking about the least positive grade, class, or teacher, what made it the least positive schooling experience for you?
	In your least positive schooling experience, describe how the teacher taught that was not helpful to you, as a learner, in mastering the content.
Final questions and thoughts	Would you consider yourself a "good" student in your kindergarten-8th grade years? If so, what qualities made you a "good" student.
	If not, what qualities do you think you would have needed to be a "good" student?
	Is there anything else you would like me to know?
	Do you have any advice for teachers about how to best assist students with ADHD in being successful learners?

Semi-Structured Interviews

"A social institution can be fully understood only if we do not limit ourselves to the abstract study of its formal organization, but analyze the way in which it appears in the personal experience of various members of the group and follow the influence which it has upon their lives" (Thomas and Znanieki, 1918/1927, cited in Galletta, 2013, p.45).

The semi-structured interview was chosen for its usefulness in gaining information about personal history from participants while remaining structured enough to understand the ideas specific to my research questions (Thomas, 2017).

I used my expertise (over 15 years of elementary teaching experience), the assistance of a secondary education professor and prior middle school educator, and a school psychologist's expertise to craft the questions for the semi-structured interview. My goal was to elicit reflections on positive and negative K-8 public schooling experiences related to teaching strategies that supported or confounded academic growth for the interviewees. After the interview questions were developed, I sought to establish face validity. I did this by having three other educators, across the elementary and middle levels, with ten or more years of experience, analyze the interview questions for accuracy in context and relevance to the research questions.

Next, I conducted pilot interviews with adults previously diagnosed with ADHD to evaluate the questions. They gave sample answers to see if the questions had reliability in answering the research questions and ease of use within the interview (Campbell, 1996).

During the actual interview, the participant was the expert on what teaching approaches were helpful for them or not as a student with ADHD. This led to follow-up questions about the participant's own school experiences and what they felt were the most effective ways that

teachers instructed to get a clearer sense of what methods and supports teachers used to best support them academically.

I took notes during the interviews and recorded the discussions to facilitate verbatim transcription by a transcription service. After the initial interview, using the constant comparative method, I noticed all the participants mentioned a "hands-on" or engaging approach to learning, development of student interest, and a solid student-teacher relationship as useful methods their teachers employed. I decided to see if anyone subject was preferred by all candidates as being the most naturally designed to those teaching methods. Participants were contacted by text to see if they were available and interested in answering follow-up questions to learn their perceptions of primary subjects, including Maths, English Language Arts, and Science. Two of the three participants replied with interest and were then interviewed by phone in the following days to complete a smaller subset of questions. They shared views on all primary subjects, favorite subjects, and extra-curricular programs or modified learning programs they were participants in. I took notes focusing on getting the main ideas and themes of those responses.

Data Analysis

Data analysis consisted of coding while using the constant comparative method (Thomas, 2017) to see what ideas emerged consistently within participants, such as similar teacher accommodations, most successful teaching styles, and shared feelings about school. Those ideas led to emerging themes (see Table 2) that were supported after multiple readings. Next, I looked for connections between the themes and my research questions (see Table 2). Finally, I looked for literature that connected to the themes to find a body of evidence to answer the question of effective classroom practices and methods for students with ADHD.

Table 2

Inductively Developed Thematic Categories

Theme	Description of theme	Relevance to research questions	Representative quotes
Teachers sought to make the learning engaging through creating situational interest and highlighting individual student interests.	When students are interested in the subject of study, they are more likely to retain learned material and be motivated to learn	RQ 1&2 It gives an idea of how to attain academic achievement and support teachers in instructional approaches by using interest-based presentation methods.	"I needed to be able to touch the material or interact with it in some way for it to stick." (Interview 3 follow up) "She made things fun. We would play games about the content, and she made the students feel like the teacher and the students were on the same team." Interview 2 "…teachers should make an activity out of it…people that have like ADHD, they can't sit, they want to be talking and moving, and also that helps just like people when they are moving and doing, that can help remember it." Interview 1
Teacher relationship	The level of a personal relationship with the teacher is a strong predictor of student's attitude toward their ADHD and focus in the class. When teachers are supportive with adaptations, tutoring, and checking in on students personally and academically, they are more likely to want to work and remain involved even if the task is difficult.	RQ 1 Students felt that the teacher relationship and how the teacher made them feel about having ADHD greatly impacted their academic learning for that year.	"… just checking up on students, seeing how they're doing…checking up on them and see if they do need help and they are just not saying it." Interview 1 "So, if someone's there and just keeping you up and like, okay, this person's actually caring about me, they want me to do good. So, I want to do that for them so they can see me succeed." Interview 1 "I was sensitive to the attitude of the teacher. I wasn't going to put the energy into the class if I didn't like the teacher." Interview 2

(Table continues)

Theme	Description of theme	Relevance to research questions	Representative quotes
Teachers created learning experiences where participants were personally engaged in the construction of knowledge.	When students are involved in their learning, it is easier for students with ADHD to remain engaged and retain information.	RQ 1&2 Students remembered retaining more of their learning when the learning was broken into small segments, and they were involved in the construction of knowledge. This was a practice that was noted to support student's perceived achievement and should therefore be incorporated into practices.	"In high school, it became more focused on debates and like writing on topics and arguing for certain viewpoints. I really like government and politics because it was about defending a view point in a debate." Interview 2 "So, what she (teacher) would do as she would have it as a team. You would have one person cut the heart. And then you had one person identifying all the pieces of the heart, and then one person wrote it down. For me, it's so much easier than having everybody having to write it on their own paper. It was nice to have that group where everybody had a role." Interview 3

Coding

I started with a first read of the transcripts for all three participants to refresh myself on the content. The first round of coding included low-level “attribute coding” (Saldaña, 2013) to get a complete picture of participants as individuals with ADHD in an educational context. Then the transcribed texts were read through with salient quotes and ideas coded using the in vivo method to honor the participants' experiences in their words (Saldaña, 2013). Next, the transcripts went through a second reading using the initial coding method to code more significant concepts within the quotes and group similar thoughts together (Saldaña, 2013). Lastly, the transcripts were coded a third time to theme the quotes and initial coding. This was done using the constant comparative method to look for emerging themes across interviews to build a more extensive understanding of shared experiences between those with ADHD in early to middle schooling (Saldaña, 2013).

Benefits of the qualitative methodology and semi-structured interviews

Using the qualitative methodology allowed me to address the participants' uniquely personal and reflective experiences using their words (Given, 2016). Additionally, qualitative research is advantageous because it can be adapted spontaneously to morph as the situation requires (Smith & Bowers-Brown, 2010). Finally, Qualitative research is inductive and grows as data is analyzed versus being fixed from the beginning (Bogdan & Biklen, 2007).

Semi-structured interviews fit my project best due to the ability to focus on veins during the interviews but have the freedom to explore other lines of questioning as they became valid (Thomas, 2017). Furthermore, it allowed me to control the line of questioning and the direction of recall (Cresswell & Cresswell, 2018). Finally, doing multiple individual interviews also

allowed for new issues and questions to be considered between participants, gaining a cumulative perspective, and building initial connections between them (Bogdan & Biklen, 2007).

Limitations of the qualitative methodology and semi-structured interviews

While qualitative research was the best fit for my research questions, there are some limitations to the qualitative methodology. The cornerstone of qualitative research is its rootedness in a site-specific context. This means that the research findings should not be generalized by the researcher outside of the site-specific context (Cresswell & Cresswell, 2018). In addition, there is bias present from the researcher and the participants in semi-structured interviews and the qualitative methodology. Finally, semi-structured interviews lend to less standardized procedures than quantitative research methods, meaning that the conclusions are based on interpretive analysis.

Chapter 4

Results and Discussion

In this chapter, I discuss the themes that emerged from the interviews, literature that currently exists around those themes, and how the interviews answered my research questions. Finally, I will discuss what this study tells about instructional practices that support students with ADHD academically, the limitations of my study, and how further research could address lingering questions.

Recall that I interviewed three participants currently enrolled in university as undergraduates for their recollected experiences in late elementary and middle school of positive and negative instructional methodologies. The participants comprised two males and one female, all diagnosed with ADHD prior to 12. The males were both freshmen, and the female was a graduating senior. I conducted semi-structured interviews via in-person or video call platforms allowing me to take notes and later have the interviews transcribed for data analysis.

My analysis of the coded transcripts yielded three themes that the participants attributed to positive academic experiences when enacted by their teachers:

Theme 1: The teachers had a strong personal relationship with students.

Theme 1a: Teacher perception of students' positive characteristics and belief in manageability of behaviors through support had better relationships with students.

Theme 2: Teachers sought student attention through creating situational interest and highlighting individual student interests.

Theme 3: Teachers created learning experiences where participants were personally engaged in the construction of knowledge.

Theme 1: Strong Personal Relationships

“So, if someone’s there and, this person’s actually caring about me, they want me to do well [sic]. So, I want to do that [do that] for them so they can see me succeed," Participant 1. The participants in my study spoke to a theme shared by other students with ADHD in the study by Fugate and Gentry (2016). All three participants in the study echoed that when teachers support ADHD students and check in on them, they are more likely to want to work and remain involved even if the task is challenging. One participant in my study gave an example of a teacher that stood out because she let the student orally rehearse their work with her, and then she would script for the student to "help put my thoughts into words." The act of writing was difficult for this student, but the teacher saw the personal struggle and valued the student being successful, thereby adding to the positive relationship previously built.

All three participants agreed that having a teacher who believed in them and their ability to succeed, despite their ADHD diagnosis, was paramount to their best years in education. Shunk (1967) noted how an effective student-teacher relationship was one where the teacher is genuinely interested in students' well-being based on the idea that students are worthy of their time, energy, and effort. Furthermore, my participants noted other positive teacher behaviors that helped lead to a stronger relationship: checking in daily on students' personal lives, regularly communicating genuine belief in student success, including students in their accommodations, and giving individual support.

This support may come in many literature supported forms such as, a daily report card check-in with a follow up can build a relationship that is rooted in helping the student gain independence in monitoring behaviors. Teaching the student to be organized, personally and in school, can also support the student with work completion. Participant 1 mentioned how they

wanted to succeed simply because the teacher believed they could, and they wanted to live up to that expectation. Similarly, the gifted females in Fugate and Gentry's study (2016) related how positive student-teacher relationships increased their motivation and encouraged them to engage in more challenging tasks. Additionally, the Fugate and Gentry study participants mentioned that when they felt teachers understood and supported their needs, it mitigated distractibility and boredom.

Student-teacher relationships are facilitated by the teacher's mindset towards students with ADHD and are a driver of attitudes towards and treatment of those students (Rogers, Bèlanger-Lejars, Toste, & Heath, 2015). Participant 2 spoke to the influence of teacher attitude when they stated, "I was sensitive to the attitude of the teacher. I wasn't going to put the energy into the class if I didn't like the teacher." This participant went further by describing a teacher as the least positive due to the "adversarial attitude" toward that student when they needed help. Likewise, the study conducted by Mikami et al. (2019) discovered teachers who believed ADHD behaviors were external, circumstance-dependent, and changeable were less punitive in behavior management. Consequently, the students of those teachers reported more positive relationships with those teachers. The study concluded by saying that changing teacher mindset about students with ADHD, through training and education, led to greater teacher satisfaction and more positive outcomes for students with at-risk behaviors.

Ultimately, students who have a positive relationship with teachers are more engaged and more likely to succeed. The positive student-teacher relationship can also provide a protective factor in the school environment while encouraging student attitudes. In addition, teacher mindset can be a starting point to build supportive relationships that can result in positive interactions for at-risk students in school.

Theme 2: Make the Learning Student Interest Based

When students are interested in the subject of study, they are more likely to retain knowledge and motivation to learn (Shunk, 1967; Fugate & Gentry, 2016). The three participants in this study agreed on the need for teachers to build on student interest. When asked about core subjects, participants had an immediate positive reaction if they were interested in the subject or a far more negative or hesitant reaction if they were not interested in the subject. One participant mentioned how even lecture-style presentation was interesting if it was about social studies content because that was their passion. Additionally, when asked about English Language Arts, participants noted they loved to read and often engaged in discussions around books because of their interest in the choice of novels.

A prime example of the power of interest was from Participant 2; they mentioned hating social studies and history due to the dry readings and lecture-based classes. That changed in high school when debate, opinion papers, and politics engaged their interest, spurring them to participate in class and share evidence-based opinions. The participants in my study found that individual interest, or that created by the teacher, could mitigate the natural predisposition to negative attentional distractions of ADHD. When they were interested in the subject or material, they could focus on learning and engage with building knowledge.

The literature supported the findings from the interviews with Harackiewicz et al. (2016), postulating that interest is a powerful motivational process necessary to academic success. The authors went on to say that when a student is in a state of interest, the learning seems fun and natural, which can promote increased attention and engagement. Furthermore, their study found teachers play a significant role in stimulating new student interest and stabilizing or deepening

those interests through support and multiple exposures. Participant 3 gave an exemplar model of how interest can motive a student with ADHD. They had teachers throughout their school career that supported their interest in history and deepened their interest in the content to the point that they recently graduated with a bachelor's degree in secondary social studies education and are currently looking to enroll in graduate school to continue their education in history.

The findings from the current study support the use of interest-based learning for students with ADHD, a concept the literature corroborates as well. The participants noted that they were most attentive when the presented material was interesting to them, and the instructional practices preferred were those where teachers included their interests in an engaging manner.

Theme 3: Learning Experiences Included Active Participation by Students

Prince (2004) defined active learning as a broad range of teaching strategies that include students as active participants in developing and thinking about their learning. The participants in my study were adamant that the best way students with ADHD learn is by engaging them in knowledge creation through active learning. Participant 1 voiced that, "Teachers should make an activity out of [the lessons]. People that have ADHD, they can't sit, they want to be talking and moving. That helps people when they are moving and doing to remember [the lesson]."

While engagement and interest are related and support each other they are not the same thing. Teachers can use student interest and still only have them doing seat work about the thing that interests them. Likewise, teachers can use engaging practices but if they do not include student interests or gain student interest the instruction is not as impactful.

When the participants spoke about positive learning experiences, they included examples that involved more active learning approaches, such as when teachers would make a game out of reviewing content where everyone was working together to solidify concepts. Another example

was when one participant studied ancient Egypt in school and used learned research strategies to create a sarcophagus replica complete with all the accoutrement that went inside and around a traditional Egyptian royal burial. Additionally, the same participant spoke about how they had to "…touch the material or interact with it in some way for it [the knowledge] to stick." The participant supported this idea of needing active learning for material to "stick" by enthusiastically describing a lamb heart's dissection to learn about the structure and function of the organ. The participants' quotes and examples demonstrated how using gamification, active learning, and student-centered instruction was not only engaging and memorable but also allowed them to retain knowledge.

While the study participants felt they retained knowledge more effectively when participating in active learning, they did not hypothesize the reason behind the truth. Giving enlightenment to the truth is Markant et al. (2016), who postulated that active control might be a reason for increased learning outcomes due to memory and processing time. The Markant et al. (2016) study suggested that the interactive environment in active learning gives active control to the student implying that learners can adjust the pace of new learning to match their attentional state, giving them adequate time to process new information and taking attentional breaks without a loss of learning, leading to better memory of the learning. Summarily, the literature may explain what the participants felt to be accurate; an active-learning educational environment where the pace of learning is student-controlled leads to effective retention of knowledge.

Conversely, all three participants agreed that attending to an entire lecture was near impossible, and if they were taking notes, they lost content learning by trying to process two things at once. The participants often found lecture-based classes a negative experience because the teachers spoke much too quickly for their processing speed. The content presentation was

unengaging, leading to high levels of distractibility, and the application of the learning was nonexistent. Prince (2004) verified what the participants in my study experienced in citing how active learning techniques have demonstrated increased student learning outcomes compared to lecture format passive learning.

Math was a challenging subject due to most classes being lecture-based, with only one strategy presented to solve a problem and a lack of problem-solving segmentation to support students that needed a problem stepped out for concept knowledge. Supporting participants' views about difficulty learning math due to presentation style was a study by Markant et al. (2016), noting that passive education leads to lapses in learning due to students' necessary attentional breaks and the inability to process the material at the speed of presentation. The literature supports the participants in their feelings that the knowledge passed them by due to a passive presentation style and the need for extensive attentional breaks degrading the possible attainment of knowledge.

In conclusion, the literature supports the instinctual knowledge of the study participants. Active learning is the most effective way to support knowledge retention by including students in creating the knowledge and allowing them to self-pace that creation to experience the most benefit.

Research Questions and Answers

The research questions used to guide this project were:

1. What are perceptions of college students with ADHD of effective instructional approaches (practices) that supported their academic achievement in their K-8 educational career?

2. Based on college student perceptions and research on effective interventions for students with ADHD, what are possible effective instructional practices in the elementary classroom for students with ADHD?

Analysis of the interviews answers research question one and produces the following themes:

Theme 1: The teachers had a strong personal relationship with students.

Theme 1 a: Teacher perception of students' positive characteristics and belief in manageability of behaviors through support had better relationships with students.

Theme 2: Teachers sought student attention through creating situational interest and highlighting individual student interests.

Theme 3: Teachers created learning experiences where participants were personally engaged in the construction of knowledge.

My conclusion addresses research question two, where I present some ideas about what instructional practices may be beneficial to students with ADHD based on responses from the interviews and findings from the literature around student-centered learning.

The Value of Interviews in a Qualitative Method

The qualitative methodology considered the lived experiences of participants and gave voice to their perspectives. Furthermore, in a qualitative study, the participant is valued as a participating member that insight is gained from versus being a test subject that assumptions are put upon. Finally, the qualitative method was the most useful method to gain historical perspectives about the education system experienced by participants.

The method of interviewing allowed me to gather descriptive data in the participant's own words to develop insights on what were personally impactful teaching practices from the experience of students with ADHD (Bogden & Biklen, 2007). Therefore, interviewing allows us to gain awareness of social realities that we may be unaware of (Morris, 2015). Moreover, the interview gives us access to participants' memories, interpretations, feelings, experiences, and reflections that help us consider how people think the way they do (Morris, 2015). Additionally, interviewing is the only way to gain access to historical memories and personal reflections on those experiences (Cresswell & Cresswell, 2018). Finally, the information and personal stories gathered from interviews can enlighten others' perceptions so that long-held assumptions can be challenged and inadequacies can be rectified (Morris, 2015).

Challenges of the Qualitative Methodology and Interviews

Using a qualitative methodology means that my findings are not necessarily generalizable. The study speaks to the experiences and perceptions of a small group of individuals and should not be generalized to all similar individuals in the public sphere (Bogden & Biklen, 2007). Moreover, I had a small sample, so my interpretations are limited to the lived experiences of a narrow band of people that does not reflect the breadth of experiences nationwide. Finally, there is bias in all research that also dwells in interviews, introduced by participant perceptions of events and researcher bias (Cresswell & Cresswell, 2018).

Insight from the Current Study

The three themes have a common thread that unites the practices under the umbrella of adult-guided, student-centered learning. Student-centered learning practices are teaching methods that focus on the learner constructing meaning with teacher support and guidance versus the teacher being the holder of all knowledge (Lee and Hannafin, 2014). Student-centered

practices are also driven by individual interest and task the teacher in creating situational interest by posing a complex problem or phenomena. Additionally, the teacher must then have relationships with their students to be aware of what interests students have and what complex problems would best capture situational interest for their students.

Some examples of student-centered approaches are problem-based learning, project-based learning, discovery learning, universal design for learning, and inquiry learning. These constructivist approaches are always student-centered but have varying degrees of teacher support and scaffolding (Hannafin et al., 2014). Lee and Hannafin (2014) asserted that student-centered learning has students assume greater independence and responsibility for their learning by pursuing individual learning goals. Students build on their background knowledge to further explore more complex learning by selecting appropriate tools and conducting learning experiments. Students use each other's support and teachers' scaffolding to advance their learning and share their findings.

In addition, Hua et al. (2012) authored a study about inquiry-based instruction within a community of practice for college-level students. They found focusing on a strength-based approach and developing student talent to contribute to a learning community in inquiry-based instruction moved underachieving students to attain academic success. Similarly, Fugate and Gentry (2016) found that differentiated instruction motivated achievement and independence while more choice-based learning honored student interests and strengths. Moreover, Akinbobola (2015) agreed that guided discovery was the most effective teaching strategy for enhancing the transfer of knowledge in physics. Summarily, the literature shows that active learning methodologies engage students in creating and remembering content that is unequivocal in passive learning environments. Due to the need for stimulation and active involvement for

students with ADHD (DuPaul & Stoner, 2014), we can extrapolate that what is presented in the literature as helpful for student learning overall may also support the learning of students with ADHD.

Multiple studies addressed the need to define how constructivism and student-centered approaches to learning are used within the context of what has been ascertained in the past decade about how students learn (Brooks et al., 2010; Lee & Anderson 2013; Hannafin et al., 2019). Hajian notes how modern constructivist theories view learners as actively engaged in developing their learning while receiving appropriate scaffolding from instructors through "…appropriate instruction, guidance, feedback, and opportunities through social interaction and involvement in authentic experiences" (p. 102). This author further indicated that efficient learning transfer was possible in the authentic context of student-centered models with supportive instructor scaffolding. Additionally, Lee and Anderson (2013) looked at the literature for direct instruction versus unguided discovery learning. They found that the best instructional models included an exploration stage followed by an instruction stage where productive failure was found to benefit from both models' strengths. Alternatively, Lee and Anderson pointed out that in the ability to solve problems, it rarely happens that students can take lectures from a teacher or book knowledge and change them into knowledge that they can transfer. Students, instead, must build their understanding of how the knowledge applies to their problem-solving. The literature around student-based learning is a burgeoning field upheld by the idea that a student-centered approach with instructor guidance allows students to create knowledge that can be transferred.

One key example of a curricular subject addressing equity in education and recommending a student-centered approach is the Next Generation Science Standards. When

creating the Framework for K-12 science education, the National Research Council saw a lack of equity in science education and teacher practices that were contributing to inequity (National Research Council, 2007). When the National Research Council (2007) published the report, Taking Science to School, on learning and teaching science, they noted the lack of studies on equity in science education, and therefore gave no recommendations other than the need for further study to address equity in science education. However, there were some recommendations for teacher practices, including using a range of instructional approaches to fully develop the four strands of proficiency (National Research Council, 2007).

Subsequently, the National Research Council published A Framework for K-12 Science Education, where equity and instructional practices in the science classroom were noted as being interrelated (National Research Council, 2012). The Framework did not specify a pedagogy but instead spoke to how teaching with the three dimensions in mind would lead to students being actively involved in learning opportunities and teachers needing to incorporate various approaches to teaching (National Research Council, 2012). Additionally, the Framework includes recommendations for inclusive science instruction, highlighting the need for students to learn science "through their active involvement in the practices of science" (p. 283). The Framework also recommends teachers developing educational experiences created to leverage personal interest citing that "instruction that builds on prior interest and identity is likely to be as important as instruction that builds on knowledge alone" (p.287).

With its eye towards equity in science education, the Framework was the base that Achieve, Inc. used to gather state stakeholders together to create the first iterations of the Next Generation Science Standards (NGSS) (https://www.nextgenscience.org/developing-standards/developing-standards; accessed 4/8/2021). Next, when the lead states designed the first

iteration of the NGSS, they purposefully included appendix D pertaining to the need to include all students in meeting the standards' rigor. The appendix includes where to find exemplar classroom case studies and specifically names differentiated instruction and Universal Design for Learning as specific practices that general education teachers can use to support special education students in their rooms (National Research Council, 2013). After the initial design of the NGSS, the National Research Council (2015) published Guide to Implementing the Next Generation Science Standards, further highlighting equity as a necessity to ensure the future of science and engineering in the United States. Moreover, the introduction includes a table showing the transitions necessary if the vision of the NGSS is to be realized, including systems thinking and model development to explain complex phenomena, and moving from oversimplification of science ideas for those that are perceived as less capable to supportive classroom environments where all students are given what they need to engage in complex science and engineering practices (National Research Council, 2015). Finally, Lee et al. (2015) helped explain the concept of equity put forth in the Framework and the NGSS with a publication devoted to making the NGSS accessible to all students reiterating the use of differentiated instruction, Universal Design for Learning, and adding response to intervention.

Challenges of the Current Study

The main challenge of the current study is the qualitative nature and small sample size leading to the inability to generalize findings to the broader educational community. The interviews also relied on the participants' memories and perceptions, which are innately biased (Cresswell & Cresswell, 2018). Finally, this was a retrospective interview that sought to find insight from reflection on a short period in participants' educational careers and did not have an observational or longitudinal component that may have given more powerful understandings

when viewed over time. While this study has some challenges, the insights gained from this study are still valuable in the information gleaned for my practice and guiding follow-up research that previously had few building blocks to start.

Lingering Questions and Recommendations for Future Studies

While this study found ideas for specific, isolated instructional practices that best fit these participants, there is still the question of instructional design and pedagogy that best addresses the needs of the diverse ADHD population. Future studies may want to focus on longitudinal studies that include metrics of academic achievement for students and include various subsets within students exhibiting traits of ADHD to find which pedagogical ideologies best fit each subset.

As a current practitioner in education, another lingering question is how do we prepare our future teachers to learn and implement best instructional practices for diverse learners that are becoming an ever-increasing percentage of the general education classroom. Research needs to be targeted to ensure transferability to the general education setting and be disseminated to undergraduate students in education, so they are not left to find the answers alone when they begin the practice of educating.

Finally, it piqued my interest when I heard the harmful educational practices in participants' reflections and how those same practices are implemented in classrooms still. Those participants were in elementary and middle school 7 to 10 years ago, and education as a system has not seemed to make much movement in a positive direction for students with ADHD. Why is there not greater urgency for professional development to support educators in establishing educational equity for all students? Schools have been graded on equity for years using

demographic data for subgroups, and yet educating teachers about promoting equity in their practices has not exploded on the scene.

Conclusion

Teachers will still have a myriad of responsibilities thrust upon them year after year while teaching students with various struggles. This study and the literature have shown that teachers no longer need to fumble into promising practices to assist students that struggle with attention. Practices highlighted as advancing students identified with ADHD are: relationship-based, with lessons that pique student interest through a complex problem-based approach, and the teacher guides students to discover knowledge and connections for themselves. Many programs are highlighted throughout literature to support teachers in their pursuit of better practices, including Problem-based learning (Williams & Houseal, 2018), Universal Design for Learning (National Center on Universal Design for Learning, 2013), Phenomena-based learning(Krajcik, 2015), and backward design (Wiggins & McTighe, 2005). Students with ADHD are failing academically and require educators to no longer address behaviors to make classrooms easier to manage but instead employ research-based practices that support all students in achieving the academic prowess of which they are worthy.

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