Children with ADHD often experience academic challenges and interpersonal difficulties which may impact their educational success. Using a case study approach, the authors explored the experiences of a child with attention deficit hyperactivity disorder (ADHD) in a fifth grade school setting. Findings indicated that the student had an elevated intelligence, but was working below her potential, and that despite taking psychostimulant medication for several years, the student's academic success was still being compromised by ADHD symptoms. Therefore, in addition to psychostimulant medication, teachers may help children with ADHD, and themselves, by utilizing strategies focused on conflict resolution, improved communication, increased organizational skills, as well as individualized homework and instructional assistance.

**Keywords:** ADHD, teaching strategies, case study, conflict resolution, tutoring

Attention Deficit Hyperactivity Disorder (ADHD) is a commonly diagnosed childhood behavioral disorder affecting millions of children in the U.S. every year (National Institute of Mental Health [NIMH], 2012), with prevalence rates between 5% and 11% of the population. (American Psychiatric Association [APA], 2013; CDC, 2014). The primary signs of ADHD include a persistent pattern of inattention or hyperactivity lasting in duration for six months or longer with an onset before 12 years of age. These behaviors are inappropriate for the child's age level and symptoms typically interfere with functioning in multiple environments. Two primary types of the disorder include inattentive and hyperactive/impulsive, with a combined type when both inattention and hyperactivity occur together. Inattentive ADHD is evidenced by executive functioning deficits such as being off task, lacking sustained focus, and being disorganized. Hyperactive ADHD is evidenced by excessive talkativeness and fidgeting, with an inability to control impulses that may result in harm. Children with ADHD often experience peer rejection, neglect, or teasing and family interactions may contain high levels of discord and negative interactions (APA, 2013).

Historically, much research on ADHD has focused on the academic impact of behavioral symptoms such as reading (Benezra & Douglas, 1988; Bremer & Stern, 1976; Doublas & Benezra, 1990;
Dykman & Ackerman, 1992; Felton, Wood, Brown, Campbell, & Harter, 1987; Levy & Hobbes, 1989; McGee, Williams, Moffitt, & Anderson, 1989; Narhi & Ahonen, 1995; Pennington, Grossier, & Welsh, 1993) and mathematics (Ackerman, Anhalt, & Dykman, 1986; Zentall & Smith, 1993). Other research has examined singular traits such as executive function deficits in the school setting (Bear & Rys, 1994; Bijur, Golding, Haslum, & Kurzon, 1988; Brown & Wynne, 1982), task performance in the school setting (Berk, 1986), driving (Barkley, Guervremont, Anastopoulos, DuPaul, & Shelton, 1993), and awareness of time (Barkley, Koplowicz, & Anderson, 1996; Zakay, 1992.). However, researching academic aspects of the school experience does not provide a comprehensive understanding of the systemic effects of ADHD in the school environment. Such narrowly focused studies, while relevant, have not informed teaching practices that would benefit this particular student population. Many general education teachers report utilizing behavioral interventions in their classrooms (Fabiano & Pelham, 2003), but mainstream teachers are not trained at the preservice level in how to teach to special needs students, and thus are less likely to utilize behavioral interventions than special education teachers (Forness & Kavale, 2001; Zentall & Stormont-Spurgin, 1995.) Arcia, Frank, Sanchez-LaCay, and Fernandez (2000) found that most teachers do not understand the characteristics of ADHD and are not familiar with classroom management techniques for students with these disabilities. Identifying strategies for increasing the academic success of students with ADHD is therefore crucial to their long term academic and life success.

Method

The goal of the current study was to explore the school experience of a student with ADHD in order to help identify strategies teachers may implement when working with this population. We utilized a case study design in order to examine an individual student in the natural school environment, specifically exploring factors affecting school success. Case study research emphasizes the use of multiple data sources including direct observation, interviews, and relevant artifacts to gain an in depth understanding of the particular case (Creswell, 2007).

Participant Selection

A fifth grade female student, whom we will call Gail, was enrolled at a religiously-affiliated elementary school in a large, urban Southwestern city. She was purposefully chosen for this case study because she had been diagnosed with ADHD, inattentive type, and her academic performance was below what would have been expected, given that psychological testing indicated she had an above average intelligence. Upon initial diagnosis in second grade, Gail was prescribed two psychostimulants, Ritalin and Focalin, to help control her symptoms. Both medications are stimulants and, in individuals with ADFTD, they serve to increase short-term memory and learning performance (Barkley, 2014). When used together they are found to be 80-90% effective (Greenhill et al, 2002.) At the time of the study, Gail was prescribed to take 40mg of Ritalin and 5mg of Focalin each morning, with another 5mg dose of Focalin in the afternoon. However, Gail’s mother indicated the afternoon dose was often not administered because of the hectic pace of the school schedule. Psychological testing found that Gail’s medication, when taken as prescribed, helped control her symptoms of inattention and impulsivity.
Data Collection and Procedures

An Institutional Review Board approved this study, and informed consent was obtained from both the participant and her parent. This study was conducted during a four week period in February and March in Gail’s fifth grade year. Data collection involved extensive semi-structured interviews with Gail (30 minute pre and post study), her mother (30 minute pre and post study), her primary classroom teacher (30 minute pre, middle, and post study), her social studies teacher (one 10 minute during study), her physical education teacher (one 10 minute during), and her fourth grade teacher (one 30 minute during study). Artifacts collected included psychological test reports (Connors’ Ratings Scales for Parents and Teachers, Wechsler Intelligence Scale for Children, Test of Variables of Attention), grade report cards from second through fifth grades, and over 35 hours of observation in the academic setting (classroom, lunchroom, physical education class, social studies class, music class, recess time, and art class) conducted by the primary researcher.

Data Analysis

Observational, multiple interview, and artifact data was collected in this single-subject case study. Observation data was documented through field notes and all interviews were transcribed verbatim by the primary researcher. All observation and interview data was then systematically analyzed and coded using qualitative strategies highlighted by Creswell (2007) and Huberman and Miles (1994). The data grouped itself into four primary themes of behavioral concerns, academic abilities (e.g., the outcome of classwork, homework, art projects), organization of time and/or materials, and interpersonal relations. All data points were triangulated with each other and member checked with the classroom teacher to ensure accuracy of interpretation and findings.

Results

The first observation of Gail was on a Monday morning and she was only aware of what the rest of the class had been told – that a researcher was present to observe the class. The primary researcher anticipated getting a more accurate understanding of Gail’s behavior if she was not aware of being specifically observed. Concerns that this observation approach could lead to feelings of betrayal when Gail was later was informed of the researcher’s true purpose was considered. However, one day of anonymous observation was undertaken at the urging of her mother who expressed concern that Gail might change her behavior if she knew she was being observed. Later that evening, when the researcher’s purpose was revealed, Gail expressed excitement at having been the participant of the observation. After the initial day of observation, Gail was then aware of the focus of the primary researcher in subsequent school observations.

Theme 1: Behavioral Concerns

Gail’s behavior during the day, and for most days of observation, could be described as typical of her classroom peers. During the majority of observations she remained at her desk at appropriate times, spoke at appropriate times, and was no more disruptive to other students in the class than any other student. She volunteered to answer questions more than some students and less than others. In other words, except for her inattention during lesson times, she did not exhibit the typical characteristics of a student with uncontrolled ADHD, such as being disruptive during lessons or excessive physical motions like fidgeting. Gail’s behavior patterns remained consistent during the four weeks of observation.

Gail’s behavior was only markedly different on one day, mostly due to the fact that she had a cold and had not taken her ADHD
medication that morning. The following excerpt from the field notes on that day documents her behavior when she was off her prescribed psychostimulants:

“1:30 pm Science. The class is taking a Science test today. As the papers are handed out the students that have done extra credit projects are turning them in. Gail hands one in, but takes quite a long time to do it. She misses part of the instructions regarding the test since she is taking an inordinate amount of time to put her poster board with the other projects along the wall closest to her desk. While the students are working on the test, Gail does the same. Breaks in her focus occur when she takes a longer time than necessary to choose a different pen, watches the girl beside her put her hair in a ponytail holder, and goes to the restroom.

The process for going to the restroom is that the student who wants to go signs out on the clipboard by the door and takes one of three keys hanging beside the clipboard. The student signs in on the clipboard when he/she returns from the restroom.

When Gail goes to the restroom this time she spends two minutes (timed) rearranging the keys on the hooks that hold them. Then she goes to the restroom- is gone four minutes- and then comes back and signs back in. She spends another minute signing back in by reading the time on the clock, and taking a circuitous route back to her desk. She then goes back to taking her test. For the 15 minutes remaining of this Science period, she goes off task again 3 minutes later and starts writing on her hand. I notice something already drawn on the back of one hand and I wonder what it is and when it got there. She marks one answer on her test and then goes across the room to wash the stuff off her hands at the sink. This lasts for two minutes then she comes back and sits down. She then begins looking around at the other students milling around the class, because most of the other class members are finished with their tests and are working on homework for tomorrow or reading books. Then she begins to draw on her knee, below her skirt. She takes a moment to look back at her test and mark an answer. She is marking her knee again when Mrs. King, the classroom teacher, asks who in the classroom is still working on their test. Approximately five students raise their hands- Gail and two of her tablemates being three of the five. Gail goes back to working on her test and marking on her leg. Mrs. King walks the room and stands behind her. Gail takes this nonverbal cue and begins to work on her test again and the teacher moves away. This focus lasts for three minutes and then is broken by the girls whispering quietly behind her so she turns to watch them switching glasses and trying on other students’ glasses in the group. At 2:15 pm Mrs. King asks who is still working and there are three now, Gail and two other girls. They are instructed to continue working on their tests and the rest of the class to get out their religion books. When one of the girls at Gail’s table is getting out her books, she and Gail have a whispered conversation. Once the lesson starts, Mrs. King tells those still working to go to the library to finish their tests. Gail leaves with the other two to go to the library. Then she comes back and gets one of her papers that she has left on her desk. She leaves again quickly,
practically running out of the room. This is the fastest I’ve seen her move during my observation periods (this is the fourth such observation).

This classroom observation documented Gail’s behavior when her executive functioning skill of self-regulation and her hyperactivity were not being managed by her medication. Her behavior was therefore typical of untreated ADHD (e.g., out of her seat at inappropriate times, speaking at inappropriate times, and impulsive behaviors such as drawing on her hands and knees). She was still off task at times when taking her medication as prescribed, but much less frequently, approximately 25% of the time. The reduction of ADHD behavioral symptoms when Gail was medication compliant matches the findings from prior research documenting the effectiveness of psychostimulants in symptom management (Barkley, 2014; Barkley, DuPaul, & Connor, 1999).

**Theme 2: Academic Abilities**

During an observation of a science lesson, it was discovered that Gail had scored a 45% on a recent science test and that her science grade at the end of the first trimester had been 74% (considered a “C” at her school). In an initial interview with Gail, she shared, “The hardest thing in school today was science. I wasn’t sure what steps to do in our experiment and I’m not sure when the extra credit is due, either.” Even though she felt unsure of what steps to take in that day’s assignment, her trimester grade suggests that she understands enough information to maintain an average grade. Clearly, Gail’s grade would drop if she continued to get test and homework scores similar to the 45%. Also, during the initial interview, Gail made the comment, “I don’t get good grades because I don’t study outside class.” Certainly Gail’s academic performance would be severely impacted if her symptoms of ADHD were not managed on most days.

Gail’s science test failure was an illustration of the academic impact of not taking her medication. Yet, even on days when she was medication compliant, many of her assignments were not completed satisfactorily or were not turned in on time. Gail’s report cards during her fifth grade year, as well as from previous years, suggested she needed additional help beyond psychostimulant medication; specifically, with completing homework assignments. Interviews with Gail’s teacher, Gail’s mother, and Gail herself, as well as classroom observations support this conclusion. During an interview, Gail made the comment, “I have too many things to do after school so I don’t always get my homework done.” This shows an awareness of her needing additional organizational skills.

**Theme 3: Organization of Time and/or Materials**

Gail was aware she needed help with organization in order to get assignments completed and submitted on time. She asked the school psychologist to come in during lunch recess one day to help her organize her desk. The school psychologist did and Gail seemed pleased to get help with this project and to spend time with the school psychologist, with whom she appeared comfortable. During the desk organization the psychologist made the comment that, “getting it organized is one thing; keeping it organized is another.” Gail gave a verbal agreement of the psychologist’s comment, but neither explored strategies for achieving this goal.

Interestingly, although Gail expressed being involved in too many outside activities to get her homework completed, the only formal extracurricular activity she had was a music lesson one afternoon each week. The other four weekday afternoons she remained at school for an extended-care program where
she was to work on her homework, or if she
had no homework, she had free time. Gail
therefore had ample time to complete assign­
ments and it became clear that she needed
additional support, beyond only psychostim­
ulant medications, to help her stay focused on
her academic success. Specifically, she might
have benefitted from individualized assist­
tance to keep her focused on assignments and
get them completed. Although Gail’s mother
was an elementary teacher, their relationship
had high levels of tension commonly found
between parents and children with ADHD.
Therefore, having help outside of the family
may have alleviated some of the tension be­
tween Gail and her mother.

Overall, it appeared Gail understood most
of the content in her courses as evidenced by
her grades. Her grade point average (GPA) at
the end of 4th grade was an 80%. After two tri­
mesters in fifth grade year her GPA was 75%.
Given that psychological testing indicated
her intelligence was almost two standard
deviations above the mean, it was clear her
GPA was not reflective of her true abilities
to succeed academically. It would seem un­
likely she would be able to have a solid “C”
GPA if she did not understand the academic
content. Although she had managed to obtain
passing grades so far in her schooling, her
decreasing GPA in fifth grade suggested that
as her coursework became more challenging
in middle school and beyond, her intelligence
alone may not be enough to ameliorate the
organizational challenges she experienced as
a symptom of ADHD.

Theme 4: Interpersonal Considerations

At school, Gail was not openly rejected or
teased by peers; however, she was frequently
ignored and, thus, excluded from many social
interactions. She had one friend with whom
she socialized almost exclusively. Her inter­
actions with her teachers seemed to be largely
non-confrontational, and she appeared to be
well-liked by her homeroom teacher, with
whom she spent most of the academic day.

Although the school environment ap­
peared to be largely non-confrontational, her
family interactions were frustrating for both
Gail and her mother, particularly regarding
schoolwork. Both mentioned in interviews the
struggle regarding getting schoolwork done at
home and having it completed in a neat and
comprehensive manner. Gail’s mother pro­
vided her thoughts on the conflict saying:

[Gail] procrastinates when doing her
homework or doesn’t get it done. She’s
always saying, “Later, mom, later. I’ll
do it later.” And then it doesn’t get
done without a fight. And sometimes
she lies to me and tells me it’s done be­
cause she doesn’t want to do it, or she
doesn’t want me to look at her home­
work because she knows I’ll make her
re-do it if it’s wrong. And honestly, I
don’t want to fight all the time over
homework, either. It’s kind of a battle
at our house sometimes. It’s easier to
give in.”

Discussion

There are several key findings from this
case study. Generally, Gail performed well
within the complex web of interactions need­
ed to excel in an academic setting. Drawing
on her elevated intelligence, the support of
psychostimulant medication, and the use of
organizational strategies, Gail had managed
to maintain an average level of academic per­
formance despite her diagnosis of ADHD.
Interpersonally, Gail was liked by her teachers
and the one close friend she had in her class.
She was not openly rejected or teased by her
classmates as has been found in some studies
(Dirks, Treat, & Weersing, 2007), but was,
rather, invisible to them.

A second finding of this study concerns
executive functioning. Gail’s intelligence was
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above average, however, problems with time management, inattention to detail, self-regulatory issues, and lack of strategic planning prohibited her from achieving her full potential. Although in the fifth grade Gail was successful in compensating for these deficits with her elevated intelligence, the long-term sustainability of this strategy is doubtful. As academic content gains more complexity, especially once she enters middle school, she may no longer be able to rely on her intelligence as a coping strategy.

A third finding of this study is the interpersonal tension and conflict that homework brought to the relationship between Gail and her mother. The participant’s parent acknowledges the conflict and admits that sometimes it is easier to give in than to fight it. This finding of family discord is consistent with previous research (Barkley, 2014; Cunningham & Barkley, 1979; Gerdes, Hoza, & Pelham, 2003; Mash & Johnston, 1982).

Strategies for Academic Success

Case study research does not generally provide sufficient validity or reliability to make generalizations across populations. However, based on the findings from this study, we have four recommendations that may have applicability for other children with ADHD experiencing similar challenges. First of all, conflict resolution training may be helpful for children with ADHD, their teachers, and family members (Barkley, 2014.) The symptoms of ADHD frequently lead to contentious interactions with authority figures including teachers and parents, as well as other family members and peers. Conflict resolution training for students with ADHD and their teachers may facilitate better communication and reduce potential tensions in the classroom. Although Gail generally had non-confrontational relationships with her teachers, many students with ADHD experience interpersonal conflict and therefore such training may significantly improve teacher-student relationships. Beyond conflict issues specifically, increasing the interpersonal communication abilities of students with ADHD may prevent miscommunications that may negatively affect relationships with peers, parents, and family members. Teachers may specifically collaborate with school counselors to help identify and implement conflict resolution interventions and improved communication strategies for students with ADHD (Hamilton & Astramovich, 2014).

Secondly, modifying the classroom environment has been shown to be effective for students with ADHD (Dupaul, Eckert & Vilardo, 2012). Specifically, teachers could allow time in the classroom for individualized study time with a tutor, such as an older student or classroom volunteer. An in-class tutor could work with the student one-on-one, assisting the student to get organized and focused, so he or she can complete assignments. Teachers could also help parents identify appropriate after-school tutors to help ensure homework assignments are regularly completed. Ultimately, the use of one-on-one tutors may reduce stress related to assignment completion for the student with ADHD, his or her parents, and teachers.

Thirdly, organizational training can empower children with ADHD to become responsible for their academic success (DuPaul & Stoner, 2014; Pfiffner, 2011) by being able to keep track of and submit homework and other in-class assignments. Key to this type of training is consistency of the use of organizational skills because when a student with ADHD loses attention, he or she misses part of each interaction. Therefore, it takes much longer for any new skill to become a relied upon strategy. While such repetition may be irritating to the teacher, it is crucial to the student. Organization techniques may include a two pocket folder wherein the left side is dedicated to work to be completed each day and
the right to work that is completed by the end of each day/night, a homework journal that is signed by the teacher and student before it leaves school each day and parent after he/she sees the work has been completed and is in the proper side of the folder, and/or various pockets/holders to keep supplies contained within the student's desk/locker/book bag.

Lastly, stimulant use has been shown to be both safe and effective for treating symptoms of ADHD by decreasing inattention to school tasks, increasing school productivity, and improving performance on academic tests (Barkley, 2014). Thus, identifying strategies to ensure medication compliance can minimize preventable, negative impacts on student's academic performance. Teachers may be able to assist with this by having school hour dosage time(s) written into the student's journal, the teacher setting an alarm on their phone to remind the student it's time for his/her dosage, and/or having an hour-glass or egg timer started at a time right after recess (or whatever set activity is close to dosage time) may all be viable options for the teacher to assist in this strategy.

Limitations and Future Research

This study utilized a single subject, qualitative case study design (N = 1). Therefore, the unique experiences documented may not be generalized to other children with ADHD. However, Gail's symptoms and experiences were consistent with the literature on ADHD effects on academic success, so it may be possible for other researchers and practitioners to identify with Gail's characteristics, challenges, and strengths. Given the particularly stressful nature of the conflict between children with ADHD, their parents, other family members, friends, and teachers, it seems that further research specific to conflict resolution training for children with ADHD is warranted. In addition, further studies about the psychosocial ramifications of ADHD in the school environment may help identify strategies to help children with ADHD develop stronger interpersonal skills.

Conclusion

The challenges for students with ADHD are numerous and occur in multiple contexts in the home and school settings. This case study highlighted the need for students with ADHD to receive additional support beyond psychostimulant medication to help manage symptoms of inattention while at school. In the classroom, teachers may help foster the development of conflict resolution and organizational skills in students with ADHD. In addition, teachers can help coordinate individualized tutoring during the day, and help parents locate tutors for after school hours to keep students with ADHD focused on completing academic assignments. Ultimately, by providing such interventions, children with ADHD can develop confidence in their abilities and achieve their highest academic and interpersonal potentials.
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